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This section of the FEDERAL REGISTER contains regulatory documents having general applicability and legal effect, most of which are keyed to and codified in the Code of Federal Regulations, which is published under 50 titles pursuant to 44 U.S.C. 1510.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Docket No. FAA–2019–0625; Airspace Docket No. 19–AWP–2]

RIN 2120–AA66

Amendment of Class E Airspace; Redding, CA

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This action modifies Class E airspace designated as an extension to a Class D or Class E surface area, and Class E airspace extending upward from 700 feet above the surface at Redding Municipal Airport, Redding CA. This action also removes Class E airspace extending upward from 1,200 feet above the surface; this airspace is wholly contained within the Rogue Valley en route airspace and duplication is not necessary. Additionally, this action updates the geographic coordinates of the airport to match the FAA's database. Lastly, this action removes references to the Redding VOR/DME and Lassen NDB from the airspace legal description, as well as the airspace extensions associated with the navigational aids.

DATES: Effective 0901 UTC, March 26, 2020. The Director of the Federal Register approves this incorporation by reference action under Title 1 Code of Federal Regulations part 51, subject to the annual revision of FAA Order 7400.11 and publication of conforming amendments.

ADDRESSES: FAA Order 7400.11D, Airspace Designations and Reporting Points, and subsequent amendments can be viewed online at *https://www.faa.gov//air_traffic/publications/.* For further information, you can contact the Airspace Policy Group, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591; telephone: (202) 267–8783. The Order is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of FAA Order 7400.11D at NARA, email *fedreg.legal@nara.gov* or go to *https://www.archives.gov/federal-register/cfr/ibr-locations.html.*

FOR FURTHER INFORMATION CONTACT: Matthew Van Der Wal, Federal Aviation Administration, Western Service Center, Operations Support Group, 2200 S 216th Street, Des Moines, WA 98198; telephone (206) 231–3695.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules regarding aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority. This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart I, Section 40103. Under that section, the FAA is charged with prescribing regulations to assign the use of airspace necessary to ensure the safety of aircraft and the efficient use of airspace. This regulation is within the scope of that authority as it would amend Class E airspace at Redding Municipal Airport, Redding, CA, to ensure safety and management of Instrument Flight Rules (IFR) operations at the airport.

History

The FAA published a notice of proposed rulemaking in the **Federal Register** (84 FR 52051; October 1, 2019) for Docket No. FAA–2019–0625 to amend Class E airspace designated as an extension to a Class D or Class E surface area and that airspace extending upward from 700 feet above the surface at Redding Municipal Airport, Redding, CA. Interested parties were invited to participate in this rulemaking effort by submitting written comments on the proposal to the FAA. No comments were received.

Class E airspace designations are published in paragraph 6004 and 6005 of FAA Order 7400.11D, dated August 8, 2018, and effective September 15, 2019, which is incorporated by reference in 14 CFR 71.1. The Class E airspace designation listed in this document will be published subsequently in the Order.

Availability and Summary of Documents for Incorporation by Reference

This document amends FAA Order 7400.11D, Airspace Designations and Reporting Points, dated August 8, 2019, and effective September 15, 2019. FAA Order 7400.11D is publicly available as listed in the **ADDRESSES** section of this document. FAA Order 7400.11D lists Class A, B, C, D, and E airspace areas, air traffic service routes, and reporting points.

The Rule

This amendment to Title 14 Code of Federal Regulations (14 CFR) part 71 modifies Class E airspace designated as an extension to a Class D or Class E surface area within 2.3 miles west and 2.5 miles east of the 193° bearing from the airport, extending from the 4.3-mile radius of the airport to 7.3 miles south of the Redding Municipal Airport.

This action also modifies the Class E airspace extending upward from 700 feet above the surface within a 6.8-mile radius of the airport, and within 1.1 miles west and 1 mile east of the 360° bearing from the airport, extending from the 6.8-mile radius to 12.5 miles north of the airport, and within 8.1 miles west and 4 miles east of the 193° bearing extending from the airport to 16 miles south of the Redding Municipal Airport.

Additionally, this action removes Class E airspace extending upward from 1,200 feet above the surface as this airspace is wholly contained within the Rogue Valley en route airspace and duplication is not necessary.

Lastly, this action removes the Redding VOR/DME, the Lassen NDB from the airspace legal description and the airspace extensions associated with the navigational aids.

Class E airspace designations are published in paragraphs 6004 and 6005 of FAA Order 7400.11D, dated August 8, 2019, and effective September 15, 2019, which is incorporated by reference in 14 CFR 71.1. The Class E airspace designations listed in this document will be published subsequently in the Order.

FAA Order 7400.11, Airspace Designations and Reporting Points, is published yearly and effective on September 15.

Regulatory Notices and Analyses

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current, is non-controversial and unlikely to result in adverse or negative comments. It, therefore: (1) Is not a ''significant regulatory action'' under Executive Order 12866; (2) is not a ''significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this rule, when promulgated, would not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

Environmental Review

The FAA has determined that this action qualifies for categorical exclusion under the National Environmental Policy Act in accordance with FAA Order 1050.1F, ''Environmental Impacts: Policies and Procedures,'' paragraph 5–6.5a. This airspace action is not expected to cause any potentially significant environmental impacts, and no extraordinary circumstances exist that warrant preparation of an environmental assessment.

List of Subjects in 14 CFR Part 71

Airspace, Incorporation by reference, Navigation (air).

Adoption of the Amendment

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR part 71 as follows:

PART 71—DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

■ 1. The authority citation for 14 CFR part 71 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

§ 71.1 [Amended]

■ 2. The incorporation by reference in 14 CFR 71.1 of FAA Order 7400.11D, Airspace Designations and Reporting Points, dated August 8, 2019, and effective September 15, 2019, is amended as follows:

Paragraph 6004 Class E Airspace Areas Designated as an Extension to a Class D or Class E Surface Area.

* * * * *

AWP CA E4 Redding, CA

Redding Municipal Airport, CA
(Lat. 40°30′32″ N, long. 122°17′36″ W)

That airspace extending upward from the surface within 2.3 miles west and 2.5 miles east of the 193° bearing from the airport, extending from the 4.3-mile radius of airport to 7.3 miles south of the Redding Municipal Airport. This Class E airspace area is effective during the specific dates and times established in advance by a Notice to Airmen. The effective date and time will thereafter be continuously published in the Chart Supplement.

Paragraph 6005 Class E Airspace Areas Extending Upward From 700 Feet or More Above the Surface of the Earth.

* * * * *

AWP CA E5 Redding, CA

Redding Municipal Airport, CA
(Lat. 40°30′32″ N, long. 122°17′36″ W)

That airspace extending upward from 700 feet above the surface within a 6.8-mile radius of the airport and within 1.1 miles west and 1 mile east of the 360° bearing from the airport, extending from the 6.8-mile radius to 12.5 miles north of the airport and within 8.1 miles west and 4 miles east of the 193° bearing extending from the airport to 16 miles south of the Redding Municipal Airport.

Issued in Seattle, Washington, on January 2, 2020.

Shawn M. Kozica,

Group Manager, Operations Support Group, Western Service Center.

[FR Doc. 2020–00106 Filed 1–9–20; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Docket No. FAA–2019–0757; Airspace Docket No. 19–AEA–13]

RIN 2120–AA66

Amendment of the Class E Airspace; Coudersport, PA; and Revocation of Class E Airspace; Galeton, PA

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This action amends the Class E airspace extending upward from 700 feet above the surface at Charles Cole Memorial Hospital Heliport, Coudersport, PA, and revokes the Class E airspace extending upward from 700 feet above the surface at Cherry Springs Airport, Galeton, PA. This action is due to an airspace review caused by the closure of the Cherry Spring Airport. The geographic coordinates of Charles Cole Memorial Hospital Heliport would also be updated to coincide with the FAA's aeronautical database. Airspace redesign is necessary for the safety and management of instrument flight rules (IFR) operations at Charles Cole Memorial Hospital Heliport.

DATES: Effective 0901 UTC, March 26, 2020. The Director of the Federal Register approves this incorporation by reference action under Title 1 Code of Federal Regulations part 51, subject to the annual revision of FAA Order 7400.11 and publication of conforming amendments.

ADDRESSES: FAA Order 7400.11D, Airspace Designations and Reporting Points, and subsequent amendments can be viewed online at *https://www.faa.gov/air_traffic/publications/*. For further information, you can contact the Airspace Policy Group, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591; telephone: (202) 267–8783. The Order is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of FAA Order 7400.11D at NARA, email *fedreg.legal@nara.gov* or go to *https://www.archives.gov/federal-register/cfr/ibr-locations.html.*

FOR FURTHER INFORMATION CONTACT: Jeffrey Claypool, Federal Aviation Administration, Operations Support Group, Central Service Center, 10101 Hillwood Parkway, Fort Worth, TX 76177; telephone (817) 222–5711.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules regarding aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority. This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart I, Section 40103. Under that section, the FAA is charged with prescribing regulations to assign the use of airspace necessary to ensure the safety of aircraft and the efficient use of airspace. This regulation is within the scope of that authority as it amends the Class E airspace extending upward from 700 feet above the surface at Charles Cole Memorial Hospital Heliport, Coudersport, PA, and revokes the Class E airspace extending upward from 700 feet above the surface at Cherry Springs

Airport, Galeton, PA, to support IFR operations at Charles Cole Memorial Hospital Heliport.

History

The FAA published a notice of proposed rulemaking in the **Federal Register** (84 FR 53346; October 7, 2019) for Docket No. FAA–2019–0757 to amend the Class E airspace extending upward from 700 feet above the surface at Charles Cole Memorial Hospital Heliport, Coudersport, PA, and revoke the Class E airspace extending upward from 700 feet above the surface at Cherry Springs Airport, Galeton, PA. Interested parties were invited to participate in this rulemaking effort by submitting written comments on the proposal to the FAA. One comment was received. The FAA reviewed the comment and found that it does not relate to this action so no response is provided.

Class E airspace designations are published in paragraph 6005 of FAA Order 7400.11D, dated August 8, 2019, and effective September 15, 2019, which is incorporated by reference in 14 CFR 71.1. The Class E airspace designations listed in this document will be published subsequently in the Order.

Availability and Summary of Documents for Incorporation by Reference

This document amends FAA Order 7400.11D, Airspace Designations and Reporting Points, dated August 8, 2019, and effective September 15, 2019. FAA Order 7400.11D is publicly available as listed in the **ADDRESSES** section of this document. FAA Order 7400.11D lists Class A, B, C, D, and E airspace areas, air traffic service routes, and reporting points.

The Rule

This amendment to Title 14 Code of Federal Regulations (14 CFR) part 71:

Amends the Class E airspace extending upward from 700 feet above the surface to within a 6.3-mile radius (increased from an 6-mile radius) of Charles Cole Memorial Hospital Heliport, Coudersport, PA; removes the exclusionary language from the airspace legal description as it is no longer required; and updates the geographic coordinates of Charles Cole Memorial Hospital Heliport to coincide with the FAA's aeronautical database;

And removes the Class E airspace extending upward from 700 feet above the surface at Cherry Springs Airport, Galeton, PA, due to the closure of the airport.

This action is the result of an airspace review caused by the closure of the Cherry Springs Airport, Galeton, PA.

FAA Order 7400.11, Airspace Designations and Reporting Points, is published yearly and effective on September 15.

Regulatory Notices and Analyses

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current, is non-controversial and unlikely to result in adverse or negative comments. It, therefore: (1) Is not a ''significant regulatory action'' under Executive Order 12866; (2) is not a ''significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that only affects air traffic procedures and air navigation, it is certified that this rule, when promulgated, does not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

Environmental Review

The FAA has determined that this action qualifies for categorical exclusion under the National Environmental Policy Act in accordance with FAA Order 1050.1F, ''Environmental Impacts: Policies and Procedures,'' paragraph 5–6.5.a. This airspace action is not expected to cause any potentially significant environmental impacts, and no extraordinary circumstances exist that warrant preparation of an environmental assessment.

Lists of Subjects in 14 CFR Part 71

Airspace, Incorporation by reference, Navigation (air).

Adoption of the Amendment

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR part 71 as follows:

PART 71—DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

■ 1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g); 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

§ 71.1 [Amended]

■ 2. The incorporation by reference in 14 CFR 71.1 of FAA Order 7400.11D, Airspace Designations and Reporting Points, dated August 8, 2019, and effective September 15, 2019, is amended as follows:

Paragraph 6005 Class E Airspace Areas Extending Upward From 700 Feet or More Above the Surface of the Earth.

* * * * *

AEA PA E5 Coudersport, PA [Amended]

Charles Cole Memorial Hospital Heliport, PA (Lat. 41°46′18″ N, long. 77°58′47″ W)

That airspace extending upward from 700 feet above the surface within a 6.3-mile radius of the Charles Cole Memorial Hospital Heliport.

* * * * *

AEA PA E5 Galeton, PA [Removed]

Issued in Fort Worth, Texas, on December 30, 2019.

Thomas L. Lattimer,

Acting Manager, Operations Support Group, ATO Central Service Center.

[FR Doc. 2019–28507 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–13–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 257

[EPA–HQ–OLEM–2018–0533; FRL–10003–64–OLEM]

Georgia: Approval of State Coal Combustion Residuals Permit Program

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notification of final approval.

SUMMARY: Pursuant to the Resource Conservation and Recovery Act (RCRA or Act), the Environmental Protection Agency (EPA) is approving the Georgia Environmental Protection Division's partial Coal Combustion Residuals (CCR) state permit program, which will now operate in lieu of the Federal CCR program, with the exception of certain provisions for which the State did not seek approval. EPA has determined that Georgia's partial CCR permit program meets the standard for approval under RCRA. Facilities operating under the State's program requirements and resulting permit provisions are also subject to EPA's information gathering and inspection and enforcement authorities under RCRA and other applicable statutory and regulatory provisions.

DATES: The final approval of Georgia's partial CCR state permit program is effective on February 10, 2020.

ADDRESSES:

Docket. EPA has established a docket for this action under Docket ID No.

EPA–HQ–OLEM–2018–0533. Publicly available docket materials are available either electronically through *www.regulations.gov* or in hard copy at the EPA Docket Center, (EPA/DC) EPA West, Room 3334, 1301 Constitution Ave. NW, Washington, DC. This Docket Facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Docket Center is (202) 566–1742.

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SUPPLEMENTARY INFORMATION: Throughout this document ''we,'' ''us,'' and ''our'' means the EPA.

I. General Information

A. Overview of Final Approval

EPA is approving in part the Georgia CCR permit program, pursuant to RCRA section 4005(d)(1)(B). 42 U.S.C. 6945(d)(1)(B). Georgia's CCR permit program authorizes the Georgia Environmental Protection Division (GA EPD) to enforce State rules related to CCR activities as well as to handle permit applications and to enforce permit violations. Georgia's CCR permit program will operate in lieu of the Federal CCR program, (40 CFR part 257, subpart D) with the exception of the provisions for which the State did not seek approval, as further explained in Unit II of this **Federal Register** document. The Federal requirements corresponding to these excluded state provisions remain applicable to the Georgia facilities. The fact that Georgia is receiving partial program approval does not mean it must subsequently apply for a full program approval. However, Georgia could choose to revise its CCR permit program at some point in the future and to apply for another partial or full program approval (as appropriate) based on its revisions at that time. EPA retains its inspection and enforcement authorities under RCRA sections 3007 and 3008, 42 U.S.C. 6927 and 6928, in the case of both partial and full program approvals. *See* 42 U.S.C. 6945(d)(4)(B).

There are no federally-recognized tribes within the State of Georgia, nor any federally-recognized tribal lands/reservations adjacent to Georgia's boundaries within neighboring states. Thus, EPA did not consult with any federally-recognized tribes in connection with this action.

B. Background

CCR are generated from the combustion of coal, including solid fuels classified as anthracite, bituminous, subbituminous, and lignite, for the purpose of generating steam to power a generator to produce electricity or electricity and other thermal energy by electric utilities and independent power producers. CCR, commonly known as coal ash, include fly ash, bottom ash, boiler slag, and flue gas desulfurization materials. CCR can be sent offsite for disposal, or beneficial use, or disposed in on-site landfills or surface impoundments.

On April 17, 2015, EPA published a final rule, creating regulations at 40 CFR part 257, subpart D, that established a comprehensive set of minimum Federal requirements for the disposal of CCR in landfills and surface impoundments (80 FR 21302) (''Federal CCR regulations''). The Federal CCR regulations created a self-implementing program that regulates the location, design, operating criteria, and groundwater monitoring and corrective action for CCR disposal, as well as the closure and post-closure care of CCR units. They also include recordkeeping and notification requirements for owners and operators of CCR units. The Federal CCR regulations do not apply to activities that meet the definition of ''beneficial use'' of CCR, as that term is defined in § 257.53.

C. Statutory Authority

EPA is taking this action under the authority of RCRA sections 4005(d) and 7004(b)(1)*, as amended by the Water Infrastructure Improvements for the Nation (WIIN) Act (Pub. L. 114–322, 130 Stat. 1628). See* 42 U.S.C. 6945(d), 6974(b)(1). Under 4005(d) of RCRA, states may develop and submit to EPA an application for approval of a state CCR permit program. *See* 42 U.S.C. 6945(d). Under RCRA section 4005(d)(1)(A), 42 U.S.C. 6945(d)(1)(A), states seeking approval must submit to the Administrator ''evidence of a permit program or other system of prior approval and conditions under State law for regulation by the State of coal combustion residuals units that are located in the State.'' EPA shall approve a state permit program if the Administrator determines that the CCR state permit program meets the standard in RCRA section 4005(d)(1)(B), 42 U.S.C. 6945(d)(1)(B), *i.e.,* that it will require each CCR unit located in the state to achieve compliance with either: (1) The Federal CCR requirements at 40 CFR part 257, subpart D; or (2) other state criteria that the Administrator, after consultation with the state, determines to be ''at least as protective as'' the Federal requirements. *See* 42 U.S.C. 6945(d)(1)(B). The Administrator must make a final determination, after providing for public notice and an opportunity for public comment, within 180 days of receiving a state's complete submittal of the information required by RCRA section 4005(d)(1)(A). *See* 42 U.S.C. 6945(d)(1)(B). EPA may approve a CCR state permit program in whole or in part. *Id.* Once approved, the state permit program operates in lieu of the Federal requirements. *See* 42 U.S.C. 6945(d)(1)(A). In a state with partial program approval, only the state requirements that have been approved operate in lieu of the analogous Federal requirements, and facilities remain responsible for compliance with all remaining requirements in 40 CFR part 257.

Once a program is approved, the Administrator must review the approved CCR state permit program at least once every 12 years, as well as no later than three years after a revision to an applicable section of 40 CFR part 257, subpart D, or one year after any unauthorized significant release from a CCR unit located in the state occurs. *See* 42 U.S.C. 6945(d)(1)(D)(i)(I) through (III). EPA also must review an approved CCR state permit program at the request of another state alleging that the soil, groundwater, or surface water of the requesting state is or is likely to be adversely affected by a release from a CCR unit in the approved state. *See* 42 U.S.C. 6945(d)(1)(D)(i)(IV).

In a state with an approved CCR state permit program, EPA may commence administrative or judicial enforcement actions under section 3008 of RCRA, 42 U.S.C. 6928, if the state requests assistance or if EPA determines that an EPA enforcement action is likely to be necessary to ensure that a CCR unit is operating in accordance with the criteria of the state's CCR state permit program. *See* 42 U.S.C. 6945(d)(4). EPA may also exercise its inspection and information gathering authorities under section 3007 of RCRA, 42 U.S.C. 6927.

II. Georgia's Application

On April 13, 2018, GA EPD submitted its initial CCR permit program application to EPA Region 4 (''2018 application''). After receiving comments from EPA, GA EPD revised and submitted an updated application on March 6, 2019, containing a revised cover letter signed February 27, 2019, which requested approval of a part of its CCR permit program. GA EPD provided additional revisions to its 2018 application on May 23, 2019. Georgia's 2018 application, as revised by its March 6, 2019 and May 23, 2019 submittals, constitutes its final CCR permit program application (hereinafter ''CCR State Permit Program Application'' or ''Georgia's Application'').[1]

As noted, Georgia has requested a partial program approval of its CCR permit program. Georgia's CCR regulations are found at Ga. Comp. R. and Regs. 391–3–4-.10 (''Georgia CCR regulations''), where the State adopted by reference nearly all of the Federal regulations in 40 CFR part 257, subpart D.[2] Georgia's CCR regulations are included in Appendix C of Georgia's Application and are available in the docket supporting this action. In addition to the technical criteria in Ga. Comp. R. and Regs. 391–3–4–.10, Georgia's CCR permit program includes the permitting requirements at Ga. Comp. R. and Regs. 391–3–4–.10(9); the procedural permitting requirements in Ga. Comp. R. and Regs. 391–3–4–.02; the financial assurance requirements in Ga. Comp. R. and Regs. 391–3–4–.10(10) and 391–3–4–.13; and the reporting requirements in Ga. Comp. R. and Regs. 391–3–4–.17.

The Georgia CCR regulations do not adopt by reference 40 CFR 257.52(b), which requires compliance with the protections for Threatened and Endangered Species identified in 40 CFR 257.3–2, nor did they adopt by reference 40 CFR 257.50(e), which exempted from regulation inactive impoundments at inactive facilities. 40 CFR 257.50(e) and two other Federal regulations that the Georgia CCR regulations do adopt by reference have since been vacated by the U.S. Court of Appeals in *Utility Solid Waste Activities Group (USWAG), et al.* v. *EPA.*[3] Accordingly, Georgia is not seeking approval for the following:

1. Requirements relevant to Threatened and Endangered Species in 40 CFR 257.3–2;
2. Requirements for inactive impoundments at inactive facilities, for which Federal criteria do not yet exist following the vacatur of 40 CFR 257.50(e);
3. 40 CFR 257.101(a), which allows unlined impoundments to continue receiving coal ash unless they leak (one of the vacated provisions); and
4. 40 CFR 257.71(a)(1)(i), which classifies ''clay-lined'' impoundments as lined (one of the vacated provisions).

Georgia's CCR permit program covers a broader universe of CCR units than are covered under the Federal CCR regulations. While the ''Applicability'' section of Georgia's CCR permit program regulations mirrors that of the Federal CCR regulations (*See* Ga. Comp. R. and Regs. 391–3–4–.10(1)(a)1. and 40 CFR 257.50(b)), and the State's definition of ''CCR Unit'' matches the Federal definition (*See* Ga. Comp. R. and Regs. 391–3–4–.01(11) and 40 CFR 257.53), the Georgia CCR regulation defines ''CCR Landfills'' and ''CCR Surface Impoundments'' differently. Specifically, the State's definitions for these units include dewatered surface impoundments, National Pollutant Discharge Elimination System (NPDES)-permitted CCR surface impoundments (inactive, but not dewatered, surface impoundments at inactive facilities), and inactive CCR landfills. *See* Ga. Comp. R. and Regs. 391–3–4–.01(9) and (10). These units are, in turn, defined at Ga. Comp. R. and Regs. 391–3–4–.10(2)(a)1. through 3. These types of CCR units are not covered by the Federal CCR regulations and are therefore not included in this state program approval. *See* 40 CFR 257.50(d) and (e) and 257.53. As mentioned above, the U.S. Court of Appeals in *USWAG* v. *EPA* vacated the exclusion at 40 CFR 257.50(e) for inactive impoundments at inactive facilities from the Federal regulations. Because EPA has not yet established any Federal regulations for inactive impoundments at inactive facilities in response to the vacatur, EPA has no Federal criteria against which to compare Georgia's regulation of these units, which is why Georgia is not seeking approval of that part of its CCR permit program.

Under Georgia's CCR permit program, owners and operators of new CCR units are required to submit to the director a complete permit application prior to the initial receipt of CCR, and owners of existing CCR units (existing landfills, active surface impoundments, and inactive surface impoundments at operating power plants) were required to submit permit applications within two years of the effective date of Georgia's CCR regulations, which was November 22, 2016. Accordingly, owners and operators of these existing units submitted permit applications to GA EPD in November 2018. The permits that will be issued by the State are considered new permits and, thus, Georgia will follow its public participation procedures for draft CCR permits, as discussed in more detail in Unit III.A.1. Georgia CCR units are issued permits for the life of the unit, with a required review every five years.

III. EPA Analysis of Georgia's Application

As discussed in Unit I.C. of this document, RCRA section 4005(d) requires EPA to evaluate two components of a CCR state permit program to determine whether it meets the standard for approval. First, EPA is to evaluate the adequacy of the CCR state permit program itself (or other system of prior approval and conditions). *See* 42 U.S.C. 6945(d)(1)(A). Second, EPA is to evaluate the adequacy of the technical criteria that will be included in each permit, to determine whether they are the same as the Federal criteria, or to the extent they differ, whether the modified criteria are ''at least as protective as'' the Federal requirements. *See* 42 U.S.C. 6945(d)(1)(B). Only if both components meet the statutory requirements may EPA approve the program. *See* 42 U.S.C. 6945(d)(1).

On that basis, EPA conducted an analysis of Georgia's CCR permit program as described in its CCR State Permit Program Application, including a thorough analysis of the Georgia CCR regulations and their adoption by reference of portions of 40 CFR part 257, subpart D. As noted, Georgia has

[1] The revised narrative in Georgia's Application, dated May 22, 2019, shall be substituted for the original narrative, dated March 19, 2018, and the addendum to the part 257 Checklist for CCR Surface Impoundments and CCR Landfills, submitted on March 6, 2019, shall be added to the part 257 Checklist provided with the original submission in the 2018 application. All other documents submitted as part of the 2018 application remain unchanged.

[2] The Georgia CCR regulations adopt 40 CFR 257.60 through 257.107 (80 FR 21468 (April 17, 2015)), as amended at 80 FR 37988 (July 2, 2015) and 81 FR 51807 (August 5, 2016). *See* Ga. Comp. R. and Regs. 391–3–4–.10(1)(c).

[3] *See Utility Solid Waste Activities Group, et al.* v. *EPA*, No. 15–1219 (D.C. Circuit). On August 21, 2018, the United States Court of Appeals for the District of Columbia Circuit vacated and remanded three provisions of the Federal CCR regulations: 40 CFR 257.101(a), which allowed unlined impoundments to continue receiving coal ash unless they leak; 40 CFR 257.71(a)(1)(i), which classified ''clay-lined'' impoundments as lined; and 40 CFR 257.50(e), which exempted from regulation inactive impoundments at inactive facilities. Although Georgia did not adopt by reference 40 CFR 257.50(e), it did adopt by reference 40 CFR 257.71(a)(1)(i) and 40 CFR 257.101(a) at Ga. Comp. R. and Regs. 391–3–4–.10(c), two of the three provisions that were vacated.

requested partial program approval of its CCR permit program.

Based on this analysis, EPA has determined that the portions of Georgia's CCR permit program that have been submitted for approval meet the standard in sections 4005(d)(1)(A) and (B) of RCRA. Georgia's CCR permit program includes all the elements of an adequate CCR state permit program as discussed in more detail in Unit III.A. It also contains all of the technical criteria in 40 CFR part 257, except for the provisions specifically discussed in Unit II. Consequently, EPA approves Georgia's CCR permit program ''in part.'' 42 U.S.C. 6945(d)(1)(B). EPA's analysis and findings are discussed in greater detail in Unit III.B and in the Technical Support Document, which is available in the docket supporting this action.

A. Adequacy of Georgia's Permit Program

RCRA section 4005(d)(1)(A) requires a state seeking program approval to submit to EPA an application with ''evidence of a permit program or other system of prior approval and conditions under state law for regulation by the state of coal combustion residuals units that are located in the State.'' RCRA section 4005(d) does not require EPA to promulgate regulations for determining the adequacy of state programs. EPA therefore evaluated the adequacy of Georgia's CCR permit program against the standard in RCRA section 4005(d)(1)(A) by reference to the existing regulations in 40 CFR part 239 (Requirements for State Permit Program Determination of Adequacy) for Municipal Solid Waste Landfills (MSWLFs) and the statutory requirements for public participation in RCRA section 7004(b). The Agency's general experience in reviewing and approving state programs also informed EPA's evaluation.

In order to aid states in developing their programs and to provide a clear statement of how, in EPA's judgment, the existing regulations and statutory requirements in sections 4005(d) and 7004(b) apply to state CCR programs, EPA developed the *Coal Combustion Residuals State Permit Program Guidance Document; Interim Final* (82 FR 38685, August 15, 2017) (the ''Guidance Document''). The Guidance Document provides guidance on a process and standards that states may choose to use to apply for EPA approval of their CCR permit programs, based on the existing regulations at 40 CFR part 239 and the Agency's experience in reviewing and approving state programs under the MSWLF and hazardous waste programs. EPA evaluated the adequacy of Georgia's CCR permit program using the process and statutory and regulatory standards discussed in the Guidance Document.

RCRA section 7004(b) applies to all RCRA programs, directing that ''public participation in the development, revision, implementation, and enforcement of any . . . program under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States.'' 42 U.S.C. 6974(b)(1). Although 40 CFR part 239 applies to approval of state MSWLF programs under RCRA 4005(c)(1), rather than EPA's evaluation of CCR permit programs under RCRA 4005(d), the specific criteria outlined in part 239 provide a helpful framework to more broadly examine the various aspects of Georgia's CCR permit program. States are familiar with these criteria through the MSWLF permit program (all states with approved MSWLF permit programs have been approved pursuant to these regulations) and the regulations are generally regarded as protective and appropriate. In general, EPA considers that a state CCR permit program that is consistent with the part 239 provisions would meet the section 7004(b)(1) directive regarding public participation. As part of analyzing Georgia's application, EPA reviewed the four categories of criteria outlined in 40 CFR part 239 as guidelines for permitting requirements, requirements for compliance monitoring authority, requirements for enforcement authority, and requirements for intervention in civil enforcement proceedings.

To complete its evaluation, EPA relied on the information contained in Georgia's Application, as well as all materials submitted during the public comment period and at the public hearing. The findings are also based on additional information submitted by Georgia on November 4, 2019, in a document titled *Supplemental Information in Response to Comments for Georgia's CCR Permit Program* (''GA EPD Supplemental Information document''), in response to follow-up questions from EPA regarding issues raised during the public comment period. All of this information is included in the docket for this action. A summary of EPA's findings is provided in this Unit, organized by the program elements identified in the part 239 regulations and EPA's Guidance Document.

1. Public Participation

Based on section 7004 of RCRA, 42 U.S.C. 6974, and the part 239 regulations, it is EPA's judgment that an adequate state CCR permit program will ensure that: (1) Documents for permit determinations are made available for public review and comment; (2) final determinations on permit applications are made known to the public; and (3) public comments on permit determinations are considered. To meet these requirements, Georgia has adopted a policy governing the procedure for public comment on draft CCR permits, which is memorialized in its ''CCR Draft Permit Public Comment Process'' Memorandum (the ''Cown-Dunn Memorandum''), signed by the Director of GA EPD on April 13, 2018. Under this procedure, GA EPD will post all draft CCR permits online and concurrently notify anyone who has signed up to receive email for coal ash-related announcements of the posting. Draft permits and all information submitted as part of CCR permit applications will be available for review in person at GA EPD's Tradeport Office in Atlanta. Draft permits will be available for public comment for 30 days, and the Director of GA EPD may extend this comment period if deemed necessary. GA EPD will accept comments via email or regular mail. After the comment period ends, GA EPD will review all comments received and make any necessary changes before making a final permit decision. When issuing a final permit, GA EPD will release a response to comments on the draft permit and will notify the public in the same manner as when it provided notice of the draft permit. The final permit and response to comments will be available for review online. The Cown-Dunn Memorandum, a sample transmittal letter to the CCR facility owner, and a sample ''Notice of the Opportunity for Public Comment'' are included in Appendix D to Georgia's Application, and are available in the docket supporting this final approval. EPA has determined that this approach provides adequate opportunity for public participation in the permitting process sufficient to meet the standard for program approval. Georgia's public participation policy is discussed more in Unit III.D.2.

2. Guidelines for Compliance Monitoring Authority

Based on the 40 CFR part 239 regulations, it is EPA's judgment that an adequate CCR state permit program should provide the state with the authority to gather information about compliance, perform inspections, and ensure that the information it gathers is suitable for enforcement. GA EPD has compliance monitoring authority under Official Code of Georgia Annotated (O.C.G.A.) sections 12–8–23.1(a)(4), 12–8–29.1, and 12–8–23.1(a)(20).

Specifically, O.C.G.A. section 12–8–23.1(a)(4) and O.C.G.A. section 12–8–29.1 give the Director of GA EPD authority to undertake investigations, analysis, and inspections to determine compliance, and to enter property to undertake investigations to verify compliance. Further, O.C.G.A. section 12–8–23.1(a)(20) grants the Director of GA EPD the authority to exercise all incidental powers necessary to carry out the purposes of applicable State law. Together these authorities provide the State with authority to obtain records from an owner or operator to determine compliance. EPA has determined that these compliance monitoring authorities are adequate, and that this aspect of the State's CCR state permit program meets the standard for program approval.

3. Guidelines for Enforcement Authority

Based on the 40 CFR part 239 regulations, it is EPA's judgment that an adequate CCR state permit program should provide the state with adequate enforcement authority to administer its CCR state permit program, including the authority to: (1) Restrain any person from engaging in activity which may damage human health or the environment, (2) sue to enjoin prohibited activity, and (3) sue to recover civil penalties for prohibited activity. GA EPD has adequate enforcement authority for its existing programs under O.C.G.A. section 12–8–23.1(a)(9), 12–8–30, 12–8–30.1, 12–8–30.4, and 12–8–30.6, and these authorities extend to Georgia's CCR permit program. For example, O.C.G.A. section 12–8–23.1(a)(9) provides the State with authority to bring an administrative or civil proceeding to enforce the Georgia Comprehensive Solid Waste Management Act and its implementing regulations. O.C.G.A. section 12–8–30 provides the State with the authority to issue orders requiring corrective action to remedy violations. Under O.C.G.A. section 12–8–30.4, the State may sue in superior court for injunctions, restraining orders, and other relief for activities that violate the State program. Finally, under O.C.G.A. section 12–8–30.6, the State has the authority to bring an administrative action to assess civil penalties for violations of the State's program. EPA has determined that this aspect of Georgia's CCR permit program meets the standard for program approval.

4. Intervention in Civil Enforcement Proceedings

Based on section 7004 of RCRA and the 40 CFR part 239 regulations, it is EPA's judgment that an adequate CCR state permit program should provide adequate opportunity for citizen intervention in civil enforcement proceedings. Specifically, a state must either: (a) Provide for citizen intervention as a matter of right or (b) have in place a process to (1) provide notice and opportunity for public involvement in civil enforcement actions, (2) investigate and provide responses to citizen complaints about violations, and (3) not oppose citizen intervention when permissive intervention is allowed by statute, rule, or regulation. In Georgia, citizen intervention is possible in the State civil enforcement process as a matter of right for interested parties who are aggrieved or adversely affected. Pursuant to O.C.G.A. section 12–8–30.2, all hearings/reviews of enforcement actions on orders shall be conducted in accordance with O.C.G.A. section 12–2–2(c), which provides that ''any person who is aggrieved or adversely affected'' by an action of the Director shall have a right to a hearing before an administrative law judge, which shall be conducted in accordance with the Georgia Administrative Procedures Act, which provides for intervention by citizens in contested cases. *See* O.C.G.A. section 50–13–14. In addition to administrative enforcement actions, the Director of GA EPD also has the ability to bring civil actions pursuant to O.C.G.A. section 12–8–30.4. Such proceedings are governed by the Georgia Civil Practice Act, which allows interested parties to intervene in civil actions. O.C.G.A. section 9–11–24. EPA has determined that these authorities provide for an adequate level of citizen involvement in the enforcement process, and that this aspect of Georgia's CCR permit program meets the standard for program approval.

B. Adequacy of Technical Criteria

EPA has determined that the technical portions of Georgia's CCR permit program that were submitted for approval meet the standard for partial program approval under RCRA section 4005(d)(1)(B)(i), 42 U.S.C. 6945(d)(1)(B)(i). To make this determination, EPA compared the technical requirements in Georgia's CCR regulations submitted for approval to their analogs in 40 CFR part 257 to determine whether they differed from the Federal requirements, and if so, whether those differences met the standard in RCRA sections 4005(d)(1)(B)(ii) and (C), 42 U.S.C. 6945(d)(1)(B)(ii) and (C). Georgia's CCR regulations are contained in Ga. Comp. R. and Regs. 391–3–4–.10, where Georgia adopts by reference portions of 40 CFR part 257, subpart D, and also spells out certain provisions. Specifically, in addition to what is required by 40 CFR part 257, the Georgia CCR regulations contain additional State-specific requirements for new and lateral expansions of CCR landfills in Ga. Comp. R. and Regs. 391–3–4–.10(3)(c)–(e); operating criteria in Ga. Comp. R. and Regs. 391–3–4–.10(5)(c); groundwater monitoring and corrective action in Ga. Comp. R. and Regs. 391–3–4–.10(6)(b)–(g); closure and post-closure care in Ga. Comp. R. and Regs. 391–3–4–.10(7)(c)–(g); and recordkeeping, notification, and posting of information to the internet in Ga. Comp. R. and Regs. 391–3–4–.10(8)(a)1.

As discussed in Unit II, Georgia did not adopt by reference 40 CFR 257.52(b), which requires compliance with the requirements relevant to Threatened and Endangered Species in 40 CFR 257.3–2. Additionally, Georgia did not seek approval of its adoption by reference of 40 CFR 257.101(a), which allowed unlined impoundments to continue receiving coal ash unless they leak, or 40 CFR 257.71(a)(1)(i), which classified ''clay-lined'' impoundments as lined, since both of the Federal 40 CFR 257.101 provisions were vacated by the D.C. Circuit in *USWAG* v. *EPA.* As a consequence, Georgia facilities will continue to be subject to the Federal requirements in 40 CFR 257.3–2, as well as the Federal requirements governing the criteria and timing for initiating the closure of unlined (including clay-lined) impoundments under 40 CFR 257.101.

EPA has therefore determined that the technical criteria in Georgia's partial CCR permit program submitted for approval meet the standard for partial program approval under RCRA section 4005(d)(1)(B)(i), 42 U.S.C. 6945(d)(1)(B)(i).

C. Public Comment Period

EPA announced its proposal to approve Georgia's CCR permit program, in part, and a 60-day public comment period on June 28, 2019 (84 FR 30977) (FRL–9995–82–OLEM). EPA also held a public hearing on August 6, 2019 in Atlanta, Georgia. The public hearing provided interested persons the opportunity to present information, views or arguments concerning EPA's proposal. Oral comments received during the public hearing are documented in the transcript of the hearing, which, along with the written comments received during the public comment period, is included in the docket for this action.

D. EPA Responses to Major Comments on the Proposed Determination

EPA received 1,462 written public comments during the comment period, including 1,110 comments submitted as part of multiple mass mail comment campaigns. The major comments received by EPA focused on seven primary topics: 1. Georgia's staffing and funding, 2. Public participation, 3. Compliance with Federal CCR regulations, 4. Location of CCR units, 5. Groundwater monitoring and corrective action issues, 6. Closure issues and unlined CCR units, and 7. *USWAG et al.* v. *EPA* decision. A more detailed summary of all comments received and EPA's responses to those comments are provided in the Response to Comments document included in the docket for this action.

1. Georgia Staffing and Funding

Comment Summary: The Agency received several comments, with varying specificity, regarding the State of Georgia's administrative resources such as funding and staffing to effectively run and enforce its CCR permit program. Specifically, some comments suggested that GA EPD lacks staff with the technical experience necessary to issue permits, monitor compliance, and enforce the program. Some commenters argued that EPA should make a determination of program inadequacy based on the State's insufficient resources. Commenters also argued that GA EPD's failure to issue any final CCR permits to date is evidence that it lacks sufficient resources.

Comment Response: EPA disagrees with the comments that the GA EPD lacks the technical expertise, staff, and budget necessary to implement the State's CCR permit program. As an initial matter, EPA reviews CCR state program applications primarily on the legal and regulatory framework that a state puts forward. Provided the information submitted demonstrates that these frameworks meet the RCRA section 4005(d)(1)(B) standard on their face, EPA does not further investigate otherwise facially credible information to attempt to forecast the State's future implementation. This is because Georgia's actual implementation of its CCR permit program will be addressed in future State program reviews, as required by the RCRA section 4005(d)(1)(D)(i).

Here, the GA EPD Supplemental Information document describes in detail the staff resources, expertise, and funding that the State has available for implementing its CCR permit program. Specifically, the GA EPD Supplemental Information document describes the staff that Georgia has dedicated to administrative reviews of permit applications, technical reviews of permit applications, and technical reviews of documents submitted either to the State or posted on a facility's publicly accessible CCR website in accordance with § 257.107 and the State regulations at Ga. Comp. R. and Regs. 391–3–4–.10(8)(a). The GA EPD Supplemental Information document provides additional information on the qualifications of the staff who are implementing Georgia's CCR permit program. The Georgia State Legislature provides funding for GA EPD's CCR permit program positions. Funding is provided through general State appropriations. If these measures subsequently prove to be inadequate or change as part of Georgia's subsequent implementation of its CCR permit program, it will be addressed in future State program reviews, as required by RCRA section 4005(d)(1)(D)(i). See Unit I.C of this document for additional detail on EPA's authority to review approved state CCR permit programs.

EPA also disagrees with comments suggesting that GA EPD's failure to yet issue any final CCR permits in Georgia is evidence of insufficient resources or a reason to make a determination of program inadequacy. EPA generally considers this issue to be beyond the scope of this action. As noted above, EPA reviews a state's CCR permit program based on the four corners of the application and does not attempt to speculate on Georgia's subsequent implementation of its CCR permit program, as this will be addressed in future State program reviews, as required by RCRA section 4005(d)(1)(D)(i).

Moreover, based the information Georgia has submitted, EPA considers these aspects of Georgia's program to be sufficient. Owners and operators of CCR units in existence at the time of the effective date of Georgia's CCR regulations were required to submit their CCR permit applications by November 2018. *See* Ga. Comp. R. & Regs. 291–3–4–.10(9)(a). GA EPD received a total of 30 applications. GA EPD staff immediately initiated an administrative review of the applications and determined all of the applications to be complete. Technical reviews began immediately thereafter. To date, GA EPD has initiated a review of at least 12 of the applications and has issued initial comment letters for each.

2. Public Participation

Comment Summary: The Agency received various comments expressing concerns over a perceived lack of meaningful public notice and opportunity to participate in decisions regarding the methods to dispose of CCR in Georgia. Commenters argued that the Georgia CCR permit program lacks the requisite public notice and comment process required by RCRA section 7004 for both issuing initial permits and conducting five-year reviews of permits. Many commenters were concerned about a lack of any requirement for public hearings to be held on every initial CCR permit and during the five-year review of CCR permits, as is required for issuing MSWLF permits in the State.

EPA received other comments on the length of time that draft CCR permits will be available for public comment. Commenters said 30 days is an unrealistic timeframe for the draft permit comment period, and some requested that Georgia allow at least 120 days as a comment period, with the Director of GA EPD able to extend that time if deemed necessary. Several commenters were concerned about Georgia's process providing adequate notice and opportunity for comment by citizens who live in rural Georgia, where internet access can be challenging.

Comment Response: Based on section 7004 of RCRA and the 40 CFR part 239 regulations, it is EPA's judgment that an adequate state CCR permitting program will ensure that: (1) Documents for permit determinations are made available for public review and comment; (2) final determinations on permit applications are made known to the public; and (3) public comments on permit determinations are considered.

As explained in Unit III.A.1, the State of Georgia has adopted a public participation policy, in the form of a memorandum, the ''Cown-Dunn Memorandum,'' that describes the steps the State will follow to provide for public participation in the CCR permitting process. The Cown-Dunn Memorandum was signed by the GA EPD Director on April 13, 2018, and, and the State has committed to follow it. In addition to what is described in Georgia's CCR State Permit Program Application, the GA EPD Supplemental Information document describes opportunities for public participation in Georgia's CCR permit program. This information indicates that Georgia's program will ensure the elements (1) through (3) described above.

Georgia has adopted procedures to ensure documents for permit determinations are made known and available to the public. When permit applications are received, GA EPD will conduct an administrative review within ten days of receipt to ensure that a complete application has been submitted. Once this determination is made, GA EPD will publish a public advisory on its web page noting that the application was submitted and provide a contact for additional inquiries. Moreover, the permit application is available for public review from the time of its receipt by GA EPD.

Subsequently, according to the Cown-Dunn Memorandum, GA EPD will provide notice of draft permits to anyone who has signed up to receive emails for coal ash-related announcements. GA EPD will post the draft permit on its website and make a hard copy available (as well as all other information submitted as part of the CCR permit application) for review in its Tradeport Office in Atlanta. Public notice will be published on its Public Announcement web page and the draft permit will be available for public comment for 30 days. If additional time is requested to extend the review time, the Director of GA EPD has the authority to extend the comment period. Georgia has also made provisions to consider public comments. The Cown-Dunn Memorandum indicates that GA EPD will accept written comments by email or regular mail. GA EPD will review all comments received and make any necessary changes to the permit.

Finally, notice of final permit determinations will be provide to the public. When issuing the final permit, the State will notify the public via email and publish a response to comments on its website. Additionally, in accordance with Ga Comp. R. & Regs. 391–3–4–.03(5), the Director of GA EPD will notify the legal organ and the chief elected official of the host local government in which the facility is located or is proposed to be located. The legal organ can choose to publish notice of the final permit if it so chooses. Within 30 days of the final permit decision, any person who is aggrieved or adversely affected may appeal the permit by filing a petition with the Director. *See* O.C.G.A. section 12–2–2(c). The appeal process is governed by the Georgia Administrative Procedure Act codified at O.C.G.A. section 50–13–1, *et seq.*

Under Ga Comp. R. & Regs. 391–3–4–.02(1)(d), CCR permits will be subject to review every five years. Permit renewals are classified as either minor or major modifications. Any major modification will be publicly noticed as a CCR draft permit and will follow the public comment process utilized for CCR draft permits required by the Cown-Dunn Memorandum.

For members of the public who have trouble accessing the internet, GA EPD will make hard copies of the draft CCR permits and application documents available for review at GA EPD's Tradeport Office in Atlanta and will accept written comments by regular mail.

Accordingly, EPA has determined that the Georgia CCR permit program provides for adequate public participation, thereby satisfying the requirements of RCRA section 7004.

3. Compliance With the Federal CCR Regulations

Comment Summary: The Agency received a number of questions or concerns about compliance issues at individual facilities in Georgia, and the overall risk of CCR management, with varying specificity and supporting data. Most of these questions and concerns related to compliance issues regarding location restrictions, groundwater monitoring and corrective action, closure, and unlined surface impoundments. The commenters suggested these issues were reasons to not approve Georgia's CCR permit program.

Comment Response: EPA reviews of CCR state program applications focus primarily on the legal and regulatory framework that a state puts forward. The Agency has determined that the underlying State statutes and regulations provide Georgia the authority to implement the CCR permit program, and that there is evidence that Georgia has utilized its authority to implement these provisions since it adopted the Federal standards in November 2016, and also prior to that time. Given that Georgia is in the early stages of implementing its new CCR regulations, it is not unexpected that compliance with those regulations across the State may be evolving.

EPA is not making any determinations regarding the compliance status of individual facilities or CCR units based on the public comment process for this final Action. However, some commenters raised concerns about compliance issues in the broader context of program approval and questioned whether Georgia has the ability and inclination to fully implement an approved program. EPA has reviewed all significant comments on this issue and has identified evidence of actions taken by GA EPD [4] to address non-compliance by working with facilities to correct deficiencies, including one case in which GA EPD issued a notice of violation (NOV) and worked with the facility to resolve it.

Additionally, since owners and operators of CCR facilities submitted CCR permit applications to GA EPD in November 2018, GA EPD staff has been reviewing groundwater monitoring reports, issuing comments on alternative source demonstrations (ASD), issuing comments on Assessment of Corrective Measures, issuing comment letters imposing regulatory deadlines for the submittal of an ASD or initiating assessment monitoring, and conducting inspections of groundwater monitoring networks at numerous facilities. GA EPD plans to continue to conduct such actions as necessary, as well as to conduct inspections for the construction and operation of CCR facilities as its normal matter of practice.

EPA does not view instances of non-compliance as a reason to deny approval of a CCR state permit program. Implementation and enforcement of Georgia's CCR requirements in the State are expected to continue, and enforcement of those provisions may be initiated not only by GA EPD, but also by EPA or by citizens, as appropriate. Georgia's implementation of its approved CCR permit program will be addressed in future State program reviews, as required by RCRA section 4005(d)(1)(D)(i). See Unit I.C for additional detail on EPA's authority to review approved state CCR permit programs.

4. Location of CCR Units

Comment Summary: The Agency received comments about the locations or siting of CCR units. Specifically, commenters were concerned about units that were located in or near populated areas, groundwater recharge areas, floodplains, unstable areas, and wetlands.

Comment Response: Several of the comments address the protectiveness of the Federal CCR requirements, which is beyond the scope of this action approving Georgia's CCR permit program and is not being reopened here.

Location restrictions for placement above the uppermost aquifer, in wetlands, in fault areas, in seismic impact zones, and in unstable areas are included in the Federal CCR regulations found at §§ 257.60 through 257.64. GA EPD has adopted these Federal CCR

[4] Georgia discusses actions it has taken to date to address non-compliance issues in the GA EPD Supplemental Information document.

regulations by reference at Ga. Comp. R. and Regs. 391–3–4–.10(1)(c), and requires compliance with them at Ga. Comp. R. and Regs. 391–3–4–.10(3). Thus, Georgia's CCR permit program contains identical requirements regarding location restrictions to those contained in the Federal CCR regulations. Additionally, the 100-year floodplain provisions at Ga. Comp. R. and Regs. 391–3–4–.05(1)(d) and 391–3–4–.10(9)(c)1.(ii) are identical to the Federal floodplain provision in the Federal CCR regulations at §§ 257.52(b) and 257.3–1.

The ''significant groundwater recharge area'' restrictions for Georgia's MSWLFs, mentioned by some commenters, are not relevant to EPA's approval of Georgia's CCR permit program. RCRA section 4005(d) requires EPA to evaluate two components of a state program to determine whether it meets the standard for approval; (1) the adequacy of the CCR state permit program itself, *see* 42 U.S.C. 6945(d)(1)(A); and (2) the adequacy of the technical criteria to be included in each permit, to determine whether they are the same as the Federal criteria, or to the extent they differ, whether the modified criteria are ''at least as protective as'' the Federal criteria, *see* 42 U.S.C. 6945(d)(1)(B). Georgia's significant groundwater recharge area restrictions for MSWLFs are codified at O.C.G.A. section 12–8–25.2. There is no analogous restriction in the Federal CCR regulations for CCR units, so this restriction is not needed for Georgia to meet the RCRA section 4005(d)(1)(B) standard.

Similarly, there are no criteria in the Federal CCR regulations in part 257 restricting CCR disposal near populated areas, so such restrictions are also not necessary for Georgia's CCR permit program to meet the RCRA section 4005(d)(1)(B) standard.

5. Groundwater Monitoring and Corrective Action Issues

Comment Summary: The Agency received many comments detailing site-specific groundwater contamination allegedly caused by various CCR facilities located in the State of Georgia. Other comments were about general groundwater contamination in Georgia that could be due to CCR facilities. Some commenters described the human health and environmental impacts of certain constituents present in groundwater and surface water.

Comment Response: EPA's action in this document is on the adequacy of Georgia's CCR permit program, and EPA is not making any determinations regarding the compliance status of individual facilities or CCR units in this action. The comments addressing particular facilities' compliance with regulatory requirements are therefore beyond the scope of this action. Georgia adopts by reference the Federal CCR regulations for groundwater monitoring and corrective action at §§ 257.90, 257.91, and 257.93 through 257.98. at Ga. Comp. R. and Regs. 391–3–4–.10(1)(c), and requires compliance with them at Ga. Comp. R. and Regs. 391–3–4–.10(6)(a), and therefore meets the standard in RCRA section 4005(d)(1)(B)(i) that the program will require each CCR unit located in the state to achieve compliance with the Federal CCR requirements at 40 CFR part 257, subpart D.

An analysis of the overall risks associated with the management of CCR is specifically addressed at 80 FR 21433, in the April 2015 final rule establishing the Federal CCR regulations and is not being reopened here.

6. Closure Issues and Unlined CCR Units

Comment Summary: Commenters were concerned about closure of CCR units with waste in place, especially if the CCR unit is unlined, near a water body, or if there is groundwater contamination from the CCR unit detected from the groundwater monitoring and corrective action program.

Commenters also identified specific closure plans for CCR units that have been submitted to GA EPD and argued that those closure plans do not, and cannot, satisfy the closure in place requirements at § 257.102(d) or the equivalent State closure regulations. The commenters suggested that these would be reasons to not approve Georgia's CCR permit program.

Some comments raised concerns about CCR disposal units with waste left in place that commenters believed must be monitored and remediated forever to prevent water pollution. These comments also raised concerns that Georgia's CCR permit program contemplates only a 30-year post-closure care period.

Comment Response: EPA is not making any determinations regarding the adequacy of any particular closure plans prepared by individual facilities based on the public comment process for this action. EPA reviews CCR state program applications primarily on the legal and regulatory framework that a state puts forward. Here, Georgia adopts by reference the Federal closure standards §§ 257.100 through 257.104 at Ga. Comp. R. and Regs. 391–3–4–.10(7). Therefore, this aspect of Georgia's CCR permit program will require each CCR unit located in the State to achieve compliance with the Federal CCR requirements.

EPA's action in this document is on the adequacy of Georgia's CCR permit program, and EPA is not making any determinations regarding the compliance status of individual facilities or CCR units in this action. The comments addressing particular facilities' compliance with regulatory requirements are therefore beyond the scope of this action.

Moreover, GA EPD is in the process of reviewing closure plans submitted to the State, along with permit applications from the CCR facilities, and has as yet made no determinations that EPA could review. EPA will not attempt to speculate on Georgia's subsequent implementation of its CCR permit program, as this will be addressed in future State program reviews, as required by RCRA section 4005(d)(1)(D)(i).

An analysis of overall risks associated with management of CCR is specifically addressed in the April 17, 2015 Federal CCR final rule at 80 FR 21433 but is beyond the scope of this action approving Georgia's CCR permit program and is not being reopened here.

7. USWAG et al. v. EPA Decision

Comment Summary: A few commenters mentioned the *USWAG* v. *EPA,* 901 F.3d 414 (D.C. Cir. 2018) case and the fact that Georgia is seeking a partial program approval because of three issues addressed by the D.C. Circuit Court's decision in the case. Other commenters said that Georgia met the necessary criteria for a partial program approval because Georgia did not seek approval for any of the provisions in the Federal CCR regulations affected by the Court's decision. Specifically, Georgia did not seek approval for the following:

1. Requirements for inactive impoundments at inactive facilities, which EPA has yet to establish following the vacatur of 40 CFR 257.50(e);

2. Its adoption by reference of 40 CFR 257.101(a), which allows unlined impoundments to continue receiving CCR unless they leak; and

3. Its adoption by reference of 40 CFR 257.71(a)(1)(i), which classifies ''clay-lined'' impoundments as lined.

Comment Response: EPA has determined that partial program approval is appropriate in light of the *USWAG* decision vacating 40 CFR

257.50(e),[5] 257.101(a), and 257.71(a)(1)(i). As some commenters noted, Georgia did not seek approval for any of the State analogues to the Federal provisions that were vacated, and EPA did not propose to approve those aspects of Georgia's CCR permit program. This means that, even after EPA's partial program approval of Georgia's CCR permit program, owners and operators of CCR units in Georgia remain responsible for complying with any Federal requirements that are promulgated in response to the D.C. Circuit's vacatur of 40 CFR 257.50(e), 257.101(a), and 257.71(a)(1)(i), through the self-implementing framework of the Federal CCR regulations. As a consequence, the Federal provisions affected by the *USWAG* decision are irrelevant to whether the other aspects of Georgia's partial CCR permit program meet the standard for approval.

IV. Approval of Georgia's State CCR Permit Program

Upon signature of this document, Georgia's CCR permit program, as described in its Application and Unit II, is approved. Because this is a partial program approval, only the State requirements that have been approved will operate in lieu of the analogous Federal requirements. Accordingly, owners and operators of CCR units in Georgia will remain responsible for compliance with all applicable requirements in 40 CFR part 257 for which Georgia did not seek approval, specifically, 40 CFR 257.3–2 (requirements relevant to Threatened and Endangered Species) and any Federal requirements that are promulgated in response to the D.C. Circuit's vacatur of 40 CFR 257.50(e), 257.101(a), and 257.71(a)(1)(i). EPA will implement such provisions under the Federal CCR program, until and unless Georgia submits a revised CCR permit program application and receives approval for these provisions. A permit issued by a state is not a shield for noncompliance with these part 257 provisions. For any CCR units that have received permits under Ga. Comp. R. and Regs. 391–3–4–.10, such permits will be in effect in lieu of the Federal 40 CFR part 257, subpart D, CCR regulations, except for those provisions noted above for which Georgia did not seek approval. For those CCR units that are not yet permitted, the Federal regulations at part 257 will remain in effect until such time that GA EPD issues permits under its approved CCR permit program for those units.

The WIIN Act specifies that EPA will review a state CCR permit program:

- From time to time, as the Administrator determines necessary, but not less frequently than once every 12 years;
- Not later than 3 years after the date on which the Administrator revises the applicable criteria for CCR units under part 257 of title 40, CFR (or successor regulations promulgated pursuant to RCRA sections 1008(a)(3) and 4004(a));
- Not later than 1 year after the date of a significant release (as defined by the Administrator), that was not authorized at the time the release occurred, from a CCR unit located in the state; and
- In request of any other state that asserts that the soil, groundwater, or surface water of the state is or is likely to be adversely affected by a release or potential release from a CCR unit located in the state for which the program was approved.

The WIIN Act also provides that in a state with an approved CCR permitting program, the Administrator may commence an administrative or judicial enforcement action under section 3008 if:

- The state requests that the Administrator provide assistance in the performance of an enforcement action; or
- After consideration of any other administrative or judicial enforcement action involving the CCR unit, the Administrator determines that an enforcement action is likely to be necessary to ensure that the CCR unit is operating in accordance with the criteria established under the state's permit program.

V. Action

In accordance with 42 U.S.C. 6945(d), EPA is approving Georgia's partial CCR state permit program.

Dated: December 16, 2019.

Andrew R. Wheeler,

Administrator.

[FR Doc. 2019–27665 Filed 1–9–20; 8:45 am]

BILLING CODE 6560–50–P

[5] As discussed in Unit II, Georgia regulates inactive surface impoundments at inactive facilities, but it did not seek approval of that part of its CCR permit program.

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 282

[EPA–R10–UST–2019–0363; FRL–10003–28–Region 10]

Idaho: Final Approval of State Underground Storage Tank Program Revisions, Codification and Incorporation by Reference

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: Pursuant to the Resource Conservation and Recovery Act (RCRA or Act), the Environmental Protection Agency (EPA) is taking direct final action to approve revisions to the State of Idaho's Underground Storage Tank (UST) program submitted by the State. The EPA has determined that these revisions satisfy all requirements needed for program approval. This action also codifies the EPA's approval of Idaho's state program and incorporates by reference those provisions of the State's regulations that we have determined meet the requirements for approval. The State's federally-authorized and codified UST program, as revised pursuant to this action, will remain subject to the EPA's inspection and enforcement authorities under sections 9005 and 9006 of RCRA subtitle I and other applicable statutory and regulatory provisions.

DATES: This rule is effective March 10, 2020, unless the EPA receives adverse comment by February 10, 2020. If EPA receives adverse comment, it will publish a timely withdrawal in the **Federal Register** informing the public that the rule will not take effect. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register, as of March 10, 2020, in accordance with 5 U.S.C. 552(a) and 1 CFR part 51.

ADDRESSES: Submit your comments by one of the following methods:

1. *Federal eRulemaking Portal: https://www.regulations.gov.* Follow the online instructions for submitting comments.
2. *Email: wilder.scott@epa.gov.*
3. *Mail:* Scott Wilder, Region 10, Enforcement and Compliance Assurance Division (ECAD 20–CO4), EPA Region 10, 1200 6th Avenue, Suite 155, Seattle, Washington 98101–3123.
4. *Hand Delivery or Courier:* Deliver your comments to Scott Wilder, Region 10, Office of Complince and Enforcement (OCE), EPA Region 10,

1200 6th Avenue, Suite 155, Seattle, Washington 98101–3123.

Instructions: Submit your comments, identified by Docket ID No. EPA–R10–UST–2019–0363, at *https://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov*. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www2.epa.gov/dockets/commenting-epa-dockets.*

You can view and copy the documents that form the basis for this action and associated publicly available materials from 8:30 a.m. to 4:00 p.m. Monday through Friday at the following location: EPA Region 10, 1200 6th Avenue, Suite 155, Seattle, Washington 98101–3123, phone number (206) 553–6693. Interested persons wanting to examine these documents should make an appointment with the office at least 2 days in advance.

FOR FURTHER INFORMATION CONTACT: Scott Wilder, (206) 553–6693, *wilder.scott@epa.gov.* To inspect the hard copy materials, please schedule an appointment with Scott Wilder at (206) 553–6693.

SUPPLEMENTARY INFORMATION:

I. Approval of Revisions to Idaho's Underground Storage Tank Program

A. Why are revisions to state programs necessary?

States which have received final approval from the EPA under RCRA section 9004(b) of RCRA, 42 U.S.C. 6991c(b), must maintain an underground storage tank program that is equivalent to, consistent with, and no less stringent than the Federal underground storage tank program. When the EPA makes revisions to the regulations that govern the UST program, states must revise their programs to comply with the updated regulations and submit these revisions to the EPA for approval. Most commonly, states must change their programs because of changes to the EPA's regulations in 40 Code of Federal Regulations (CFR) part 280. States can also initiate changes on their own to their underground storage tank program and these changes must then be approved by the EPA.

B. What decisions has the EPA made in this rule?

On September 19, 2018, in accordance with 40 CFR 281.51(a), Idaho submitted a complete program revision application seeking the EPA approval for its UST program revisions (State Application). Idaho's revisions correspond to the EPA final rule published on July 15, 2015 (80 FR 41566), which revised the 1988 UST regulations and the 1988 state program approval (SPA) regulations (2015 Federal Revisions). As required by 40 CFR 281.20, the State Application contains the following: A transmittal letter from the Governor requesting program approval, a description of the program and operating procedures, a demonstration of the State's procedures to ensure adequate enforcement, a Memorandum of Agreement outlining the roles and responsibilities of the EPA and the implementing agency, a statement of certification from the Attorney General, and copies of all applicable state statutes and regulations. We have reviewed the State Application and determined that the revisions to Idaho's UST program are equivalent to, consistent with, and no less stringent than the corresponding Federal requirements in subpart C of 40 CFR part 281, and that the Idaho program provides for adequate enforcement of compliance (40 CFR 281.11(b)). Therefore, the EPA grants Idaho final approval to operate its UST program with the changes described in the program revision application, and as outlined below in Section I.G of this document.

C. What is the effect of this action on the regulated community?

This action does not impose additional requirements on the regulated community because the regulations being approved by this rule are already in effect in the State of Idaho, and are not changed by this action. This action merely approves the existing state regulations as meeting the Federal requirements and renders them federally enforceable.

D. Why is EPA using a direct final rule?

The EPA is publishing this direct final rule without a prior proposed rule because we view this as a noncontroversial action and we anticipate no adverse comment. Idaho did not receive substantial comments during its comment period when the rules and regulations being considered in this direct final rule were proposed at the state level.

E. What happens if the EPA receives comments that oppose this action?

Along with this direct final rule, the EPA is publishing a separate document in the ''Proposed Rules'' section of this **Federal Register** that serves as the proposal to approve the State's UST program revisions, and provides an opportunity for public comment. If the EPA receives comments that oppose this approval, the EPA will withdraw this direct final rule by publishing a document in the **Federal Register** before it becomes effective. The EPA will make any further decision on approval of the State Application after considering all comments received during the comment period. The EPA will then address all public comments in a later final rule. You may not have another opportunity to comment. If you want to comment on this approval, you must do so at this time.

F. For what has Idaho previously been approved?

On February 28, 2012, the EPA finalized a rule approving the UST program that Idaho proposed to administer in lieu of the Federal UST program.

G. What changes are we approving with this action and what standards do we use for review?

In order to be approved, each state program application must meet the general requirements in 40 CFR 281.11, and specific requirements in 40 CFR part 281, subpart B (Components of a Program Application); subpart C (Criteria for No Less Stringent); and subpart D (Adequate Enforcement of Compliance). This also is true for proposed revisions to approved state programs.

As more fully described below, the State has made the changes to its approved UST program to reflect the 2015 Federal Revisions. The EPA is approving the State's changes because they are equivalent to, consistent with, and no less stringent than the Federal UST program and because the EPA has confirmed that the Idaho UST program will continue to provide for adequate enforcement of compliance as described

in 40 CFR 281.11(b) and part 281, subpart D, after this approval.

The Idaho Department of Environmental Quality (DEQ) is the lead implementing agency for the UST program in Idaho, except in Indian country.

The DEQ continues to have broad statutory authority to regulate the installation, operation, maintenance, and closure of USTs, as well as UST releases under Idaho Code, Title 39, Chapter 88, Idaho Underground Storage Tank Act, Sections 39–8801 through 39–8813. The Idaho UST Program gets its enforcement authority from the powers and duties of the DEQ Director (Director) found in Title 39, Chapter 1, Section 39–108. Under Title 39, Chapter 1, Sections 39–108 and Chapter 88, Section 39–8805, the Director is authorized to require an owner to furnish records, conduct monitoring or testing, and provide access to tanks. Penalties for non-compliance with Idaho's Underground Storage Tank Act may be assessed under Title 39, Chapter 1, Sections 39–108(5) and 39–8811. Under Idaho Administrative Code (IDAPA) 58.01.07.500, a delivery prohibition tag may be placed on a tank for failure to install required spill prevention, overfill protection, leak detection, or corrosion protection equipment.

Specific authorities to regulate the installation, operation, maintenance, and closure of USTs, as well as UST releases are found in IDAPA 58.01.07, Rules Regulating Underground Storage Tank Systems, as amended effective March 24, 2017, and Rules of Administrative Procedure Before the Board of Environmental Quality are found under IDAPA 58.01.23. Compliance monitoring authorities are found under IDAPA 58.01.07.400, as amended March 24, 2017. The aforementioned statutory sections and regulations satisfy the requirements of 40 CFR 281.40 and 281.41. Idaho has met the public participation requirements found in 40 CFR 281.42 by allowing intervention in the state enforcement process as provided in the Idaho Rules of Civil Procedure Rule 24(a).

To qualify for final approval, revisions to a state's program must be ''equivalent to, consistent with, and no less stringent'' than the 2015 Federal Revisions. In the 2015 Federal Revisions the EPA addressed UST systems deferred in the 1988 UST regulations, and added, among other things, new operation and maintenance requirements; secondary containment requirements for new and replaced tanks and piping; operator training requirements; and a requirement to ensure UST system compatibility before storing certain biofuel blends. In addition, the EPA removed past deferrals for emergency generator tanks, field constructed tanks, and airport hydrant systems. The EPA analyzes revisions to approved state programs pursuant to the criteria found in 40 CFR 281.30 through 281.39.

The DEQ has revised its regulations to help ensure that the State's UST program revisions are equivalent to, consistent with, and no less stringent than the 2015 Federal Revisions. IDAPA 58.01.07.004 incorporates by reference the requirements of 40 CFR part 280, including the requirements added by the 2015 Federal Revisions, excepting 40 CFR part 280, subpart J (Operator Training), and provisions such as the definitions of ''Replaced'' and ''Under-dispenser containment,'' recordkeeping requirements for operator training, and certain limiting date ranges. The State, therefore, has ensured that the criteria found in 40 CFR 281.30 through 281.38 are met.

Title 40 CFR 281.39 describes the state operator training requirements that must be met in order to be considered no less stringent than Federal requirements. Idaho did not incorporate by reference Federal requirements for operator training, and has promulgated and is implementing its own operator training provisions under IDAPA 58.01.07.300. After a thorough review, the EPA has determined that Idaho's operator training requirements are equivalent to, consistent with, and no less stringent than Federal requirements.

As part of the State Application the Idaho Attorney General certified that the State revisions meet the ''no less stringent'' criteria in 40 CFR 281.30 through 281.39. The EPA is relying on this certification in addition to the analysis submitted by the State in making its determination.

H. Where are the revised rules different from the Federal rules?

Broader in Scope Provisions

Where an approved state program has a greater scope of coverage than required by Federal law, the additional coverage is not part of the federally-approved program and is not federally enforceable (40 CFR 281.12(a)(3)(ii)). The following statutory and regulatory requirements are considered broader in coverage than the Federal program as these state-only regulations are not required by Federal regulation and are implemented by the State in addition to the federally-approved program: IDAPA 58.01.07.100 requires secondary containment and monitoring of any UST system, including tanks, pipes, and dispensers, installed or replaced after February 23, 2007, that is within 1,000 feet of a potable drinking water source. IDAPA 58.01.07.010.16 requires secondary containment and monitoring of replaced piping if 100% of the piping, excluding connectors, connected to a single UST is replaced in accordance with section 9003(i)(1) of the Solid Waste Disposal. IDAPA 58.01.07.100 requires owners and/or operators to provide written notice to the DEQ 30 days prior to installing a new piping system or a new or replacement UST and provide 24-hour notice to the DEQ prior to installing a replacement piping system. IDAPA 58.01.07.600 requires the DEQ to maintain a public database providing details on the status of all USTs subject to regulation in Idaho. IDAPA 58.01.07.601 requires all regulated USTs to pay annual fees. IDAPA 58.01.07.200 requires owners or operators to report the source and cause of a release to the DEQ.

More Stringent Provisions

Where an approved state program includes requirements that are considered more stringent than required by Federal law, the more stringent requirements become part of the federally-approved program (40 CFR 281.12(a)(3)). IDAPA 58.01.07.004.04 specifies that the State's rules ''shall be no more stringent than federal law or regulations governing underground storage tank systems.''

I. How does this action affect Indian country (18 U.S.C. 1151) in Idaho?

The EPA's approval of Idaho's Program does not extend to Indian country as defined in 18 U.S.C. 1151. Indian country generally includes lands within the exterior boundaries of the following Indian reservations located within Idaho: Coeur D'Alene Tribe, Kootenai Tribe of Idaho, Nez Perce Tribe, Shoshone-Bannock Tribes of the Fort Hall Reservation; any land held in trust by the United States for an Indian tribe; and any other areas that are ''Indian country'' within the meaning of 18 U.S.C. 1151. Any lands removed from an Indian reservation status by Federal court action are not considered reservation lands even if located within the exterior boundaries of an Indian reservation. The EPA will retain responsibilities under RCRA for underground storage tanks in Indian country. Therefore, this action has no effect in Indian country. 40 CFR 281.12(a)(2).

II. Codification

A. What is codification?

Codification is the process of placing a state's statutes and regulations that comprise the state's approved UST program into the CFR. Section 9004(b) of RCRA, as amended, allows the EPA to approve State UST programs to operate in lieu of the Federal program. The EPA codifies its authorization of state programs in 40 CFR part 282 and incorporates by reference state regulations that the EPA will enforce under sections 9005 and 9006 of RCRA and any other applicable statutory provisions. The incorporation by reference of state authorized programs in the CFR should substantially enhance the public's ability to discern the current status of the approved state program and state requirements that can be federally enforced. This effort provides clear notice to the public of the scope of the approved program in each state.

B. What codification decisions have we made in this rule?

In this rule, we are finalizing the Federal regulatory text that incorporates by reference the federally-authorized Idaho UST Program. In accordance with the requirements of 1 CFR 51.5, we are finalizing the incorporation by reference of the Idaho rules described in the amendments to 40 CFR part 282 set forth below. The EPA has made, and will continue to make, these documents generally available through *https://www.regulations.gov* and at the EPA Region 10 office (see the **ADDRESSES** section of this preamble for more information).

One purpose of this **Federal Register** document is to codify Idaho's approved UST program. The codification reflects the State program that would be in effect at the time the EPA's approved revisions to the Idaho UST program addressed in this direct final rule become final. If, however, the EPA receives substantive comment on the proposed rule then this codification will not take effect, and the State rules that are approved after the EPA considers public comment will be codified instead. By codifying the approved Idaho program and by amending the Code of Federal Regulations (CFR), the public will more easily be able to discern the status of the federally-approved requirements of the Idaho program.

The EPA is incorporating by reference the Idaho approved UST program in 40 CFR 282.62. Section 282.62(d)(1)(ii)(B) incorporates by reference for enforcement purposes the State's relevant statutes and regulations. Section 282.62 also references the Attorney General's Statement, Demonstration of Adequate Enforcement Procedures, the Program Description, and the Memorandum of Agreement, which are approved as part of the UST program under subtitle I of RCRA.

C. What is the effect of EPA's codification of the federally-authorized State UST Program on enforcement?

The EPA retains the authority under sections 9003(h), 9005 and 9006 of subtitle I of RCRA, 42 U.S.C. 6991b(h), 6991d and 6991e, and other applicable statutory and regulatory provisions to undertake corrective action, inspections, and enforcement actions, and to issue orders in approved States. If the EPA determines it will take such actions in Idaho, the EPA will rely on Federal sanctions, Federal inspection authorities, and other Federal procedures rather than the State analogs. Therefore, though the EPA has approved the State procedures listed in 40 CFR 282.62(d)(1)(ii), the EPA is not incorporating by reference Idaho's procedural and enforcement authorities.

D. What State provisions are not part of the codification?

The public also needs to be aware that some provisions of the State's UST program are not part of the federally-approved State program. Such provisions are not part of the RCRA subtitle I program because they are ''broader in coverage'' than subtitle I of RCRA. Title 40 CFR 281.12(a)(3)(ii) states that where a state operates an approved program with a greater scope of coverage than the Federal program, those provisions creating greater coverage are not a part of the federally-approved program. As a result, State provisions which are ''broader in coverage'' than the Federal program are not incorporated by reference for purposes of enforcement in part 282. Title 40 CFR 282.62(d)(1)(iii) lists for reference and clarity the Idaho statutory and regulatory provisions which are ''broader in coverage'' than the Federal program and which are not, therefore, part of the approved program being codified in this rule. Provisions that are ''broader in coverage'' cannot be enforced by EPA; the State, however, will continue to implement and enforce such provisions under State law.

III. Statutory and Executive Order (E.O.) Reviews

This action only applies to Idaho's UST Program requirements pursuant to RCRA Section 9004 and imposes no requirements other than those imposed by State law. It complies with applicable EOs and statutory provisions as follows:

A. Executive Order 12866 Regulatory Planning and Review, Executive Order 13563: Improving Regulation and Regulatory Review

The Office of Management and Budget (OMB) has exempted this action from the requirements of Executive Order 12866 (58 FR 51735, Oct. 4, 1993) and 13563 (76 FR 3821, Jan. 21, 2011). This action approves and codifies state requirements for the purpose of RCRA section 9004 and imposes no additional requirements beyond those imposed by state law. Therefore, this action is not subject to review by OMB.

B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is not an Executive Order 13771 (82 FR 9339, February 3, 2017) regulatory action because actions such as this final approval of Idaho's revised underground storage tank program under RCRA are exempted under Executive Order 12866. Accordingly, I certify that this action will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*).

C. Unfunded Mandates Reform Act and Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Because this action approves and codifies pre-existing requirements under state law and does not impose any additional enforceable duty beyond that required by state law, it does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531–1538). For the same reason, this action also does not significantly or uniquely affect the communities of tribal governments, as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

D. Executive Order 13132: Federalism

This action will not have substantial direct effects on the states, on the relationship between the National Government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132 (64 FR 43255, Aug. 10, 1999), because it merely approves and codifies state requirements as part of the State RCRA

Underground Storage Tank Program without altering the relationship or the distribution of power and responsibilities established by RCRA.

E. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

This action also is not subject to Executive Order 13045 (62 FR 19885, Apr. 23, 1997), because it is not economically significant, as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children.

F. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not subject to Executive Order 13211 (66 FR 28355, May 22, 2001) because it is not a ''significant regulatory action'' as defined under Executive Order 12866.

G. National Technology Transfer and Advancement Act

Under RCRA section 9004(b), the EPA grants a state's application for approval as long as the state meets the criteria required by RCRA. It would thus be inconsistent with applicable law for the EPA, when it reviews a state approval application, to require the use of any particular voluntary consensus standard in place of another standard that otherwise satisfies the requirements of RCRA. Thus, the requirements of section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) do not apply.

H. Executive Order 12988: Civil Justice Reform

As required by section 3 of Executive Order 12988 (61 FR 4729, February 7, 1996), in issuing this rule, the EPA has taken the necessary steps to eliminate drafting errors and ambiguity, minimize potential litigation, and provide a clear legal standard for affected conduct.

I. Executive Order 12630: Governmental Actions and Interference With Constitutionally Protected Property Rights

The EPA has complied with Executive Order 12630 (53 FR 8859, Mar. 15, 1988) by examining the takings implications of the rule in accordance with the ''Attorney General's Supplemental Guidelines for the Evaluation of Risk and Avoidance of Unanticipated Takings'' issued under the executive order.

J. Paperwork Reduction Act

This rule does not impose an information collection burden under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). ''Burden'' is defined at 5 CFR 1320.3(b).

K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low Income Populations

Executive Order 12898 (59 FR 7629, Feb. 16, 1994) establishes Federal executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. Because this rule approves pre-existing state rules which are at least equivalent to, consistent with, and no less stringent than existing Federal requirements, and imposes no additional requirements beyond those imposed by state law, and there are no anticipated significant adverse human health or environmental effects, the rule is not subject to Executive Order 12898.

L. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801–808, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The EPA will submit a report containing this document and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). However, this action will be effective March 10, 2020 because it is a direct final rule.

Authority: This rule is issued under the authority of Sections 2002(a), 7004(b), and 9004, 9005 and 9006 of the Solid Waste Disposal Act, as amended, 42 U.S.C. 6912(a), 6974(b), and 6991c, 6991d, and 6991e.

List of Subjects in 40 CFR Part 282

Environmental protection, Administrative practice and procedure, Hazardous substances, Incorporation by reference, State program approval, Underground storage tanks.

Dated: November 27, 2019.

Chris Hladick,

Regional Administrator, EPA Region 10.

For the reasons set forth in the preamble, EPA is amending 40 CFR part 282 as follows:

PART 282—APPROVED UNDERGROUND STORAGE TANK PROGRAMS

■ 1. The authority citation for part 282 continues to read as follows:

Authority: 42 U.S.C. 6912, 6991c, 6991d, and 6991e.

■ 2. Add § 282.62 to read as follows:

§ 282.62 Idaho State-Administered Program.

(a) *History of the approval of Idaho's Program.* The State of Idaho is approved to administer and enforce an underground storage tank program in lieu of the Federal program under subtitle I of the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6991 *et seq.* The State's program, as administered by the Idaho Department of Environmental Quality (DEQ), was approved by EPA pursuant to 42 U.S.C. 6991c and part 281 of this chapter. The EPA published the notice of final determination approving the Idaho underground storage tank base program effective on February 28, 2012. A subsequent program revision application was approved by EPA and became effective on March 10, 2020.

(b) *Enforcement authority.* Idaho has primary responsibility for administering and enforcing its federally-approved underground storage tank program. However, the EPA retains the authority to exercise its corrective action, inspection, and enforcement authorities under sections 9003(h), 9005, and 9006 of subtitle I of RCRA, 42 U.S.C. 6991b(h), 6991d and 6991e, as well as under any other applicable statutory and regulatory provisions.

(c) *Retention of program approval.* To retain program approval, Idaho must revise its approved program to adopt new changes to the Federal subtitle I program which make it more stringent, in accordance with section 9004 of RCRA, 42 U.S.C. 6991c, and 40 CFR part 281, subpart E. If Idaho obtains approval for the revised requirements pursuant to section 9004 of RCRA, 42 U.S.C. 6991c, the newly approved statutory and regulatory provisions will be added to this subpart and notice of any change will be published in the **Federal Register**.

(d) *Final approval.* Idaho has final approval for the following elements of its program application originally submitted to EPA and approved, effective February 28, 2012, and the program revision application approved by EPA effective on March 10, 2020:

(1) *State statutes and regulations*—(i) *Incorporation by reference.* The materials cited in this paragraph (d)(1) are incorporated by reference as part of the underground storage tank program under subtitle I of RCRA, 42 U.S.C. 6991 *et seq.* The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain copies of the Idaho provisions that are incorporated by reference in this paragraph (d)(1)(i) from Idaho's Office of Administrative Rules Coordinator, P.O. Box 83720, Boise, Idaho 83720; Phone number: 208–332–1820; website: *https://adminrules.idaho.gov/.* You may inspect all approved material at the EPA Region 10 office, 1200 Sixth Avenue, Seattle, Washington 98101, phone number (206) 553–6693, or the National Archives and Records Administration (NARA). For information on the availability of the material at NARA, email *fedreg.legal@nara.gov* or go to *https://www.archives.gov/federal-register/cfr/ibr-locations.*

(A) Idaho Statutory Requirements Applicable to the Underground Storage Tank Program, September 2018.

(B) Idaho Regulatory Requirements Applicable to the Underground Storage Tank Program, September 2018.

(ii) *Legal basis.* The EPA evaluated the following statutes and regulations which provide the legal basis for the State's implementation of the underground storage tank program, but they are not being incorporated by reference and do not replace Federal authorities:

(A) The statutory provisions include:

(*1*) *Idaho Code,* Title 39, ''Health and Safety,'' Chapter 1, ''Environmental Quality—Health,'' Sections 39–108 and –109.

(*2*) *Idaho Code,* Title 39, ''Healthy and Safety,'' Chapter 88, ''Idaho Underground Storage Tank Act.'' The following Sections are part of the approved State program, although not incorporated by reference in this part for enforcement purposes: Sections 39–8805, –8808, –8810, and –8811.

(B) The regulatory provisions include:

(*1*) *Idaho Administrative Code* 58 (April 1, 2018), Title 01, Chapter 02, ''Water Quality Standards,'' Sections 851 and 852.

(*2*) *Idaho Administrative Code* 58 (April 1, 2018), Title 01, Chapter 07, ''Rules Regulating Underground Storage Tank Systems.'' The following Sections are part of the approved State program, although not incorporated by reference in this part for enforcement purposes: Sections 004.01, 400.01 and .03, 500, and 600.

(3) *Idaho Rules of Civil Procedure,* Rule 24(a).

(iii) *Provisions not incorporated by reference.* The following specifically identified sections and rules applicable to the Idaho underground storage tank program that are broader in coverage than the Federal program, are not part of the approved program, and are not incorporated by reference in this part for enforcement purposes:

(A) Idaho Administrative Code 58 (April 1, 2018), Title 01, Chapter 07, ''Rules Regulating Underground Storage Tank Systems,'' Sections 010.16, 100.01 and .03, 200, 600, and 601.

(B) [Reserved]

(2) *Statement of legal authority.* The Attorney General's Statement, signed by the Deputy Attorney General of the State of Idaho on August 23, 2018, though not incorporated by reference, is referenced as part of the approved underground storage tank program under subtitle I of RCRA, 42 U.S.C. 6991 *et seq.*

(3) *Demonstration of procedures for adequate enforcement.* The ''Demonstration of Procedures for Adequate Enforcement'' submitted as part of the program revision application for approval on September 19, 2018, though not incorporated by reference, is referenced as part of the approved underground storage tank program under subtitle I of RCRA, 42 U.S.C. 6991 *et seq.*

(4) *Program description.* The program description and any other material submitted as part of the program revision application for approval on September 19, 2018, though not incorporated by reference, are referenced as part of the approved underground storage tank program under subtitle I of RCRA, 42 U.S.C. 6991 *et seq.*

(5) *Memorandum of Agreement.* The Memorandum of Agreement between EPA Region 10 and the Idaho Department of Environmental Quality, signed by the EPA Regional Administrator on March 19, 2019, though not incorporated by reference, is referenced as part of the approved underground storage tank program under subtitle I of RCRA, 42 U.S.C. 6991 *et seq.*

■ 3. Appendix A to part 282 is amended by adding an entry for ''Idaho'' in alphabetical order by State to read as follows:

Appendix A to Part 282—State Requirements Incorporated by Reference in Part 282 of the Code of Federal Regulations

* * * * *

Idaho

(a) The statutory provisions include:

(1) *Idaho Code, Title 39,* ''Health and Safety,'' Chapter 1, ''Environmental Quality—Health'': Section 39–103, ''Definitions,'' 39–103(3), (6), (7), (11), (12), (15)–(18); Section 39–107, ''Board—Composition—Officers—Compensation—Powers—Subpoena—Depositions—Review—Rules,'' 39–107(7).

(2) *Idaho Code, Title 39,* ''Health and Safety,'' Chapter 88, ''Idaho Underground Storage Tank Act'': Sections 39–8803, ''Definitions,'' –8804, ''Program Scope,'' –8805, ''Rules Governing Underground Storage Tank Systems,'' –8805A, ''Compliance Dates for Certain Rules,'' –8806, ''Additional Measures to Protect Ground Water,'' –8807, ''Operator Training,'' –8808, ''Inspections,'' –8809, ''Delivery Prohibition,'' and –8810, ''Underground Storage Tank Database.''

(b) The regulatory provisions include:

(1) *Idaho Administrative Code* 58, Title 01, Chapter 07:

Section 004 Incorporation by Reference;

Section 010 Definitions (except 010.16, defining ''Replace'');

Section 100 Additional Measures to Protect Ground Water from Contamination (except 100.01–.03);

Section 101 Alternative Periodic Testing of Containment Sumps Used for Interstitial Monitoring of Piping;

Section 300 Training Requirements.

(2) *Idaho Administrative Code* 58, Title 01, Chapter 24.

(c) Copies of the Idaho provisions that are incorporated by reference are available from Idaho's Office of Administrative Rules Coordinator, P.O. Box 83720, Boise, ID 83720; Phone number: 208–332–1820; website: *https://adminrules.idaho.gov/.*

* * * * *

[FR Doc. 2019–27844 Filed 1–9–20; 8:45 am]

BILLING CODE 6560–50–P

DEPARTMENT OF THE INTERIOR

43 CFR Part 2

[BSEE–2016–0001; 201E1700D2 EECC000000 ET1EX0000.G40000]

RIN 1014–AA41

Privacy Act Regulations; Exemptions for the Investigations Case Management System

AGENCY: Bureau of Safety and Environmental Enforcement, Interior.

ACTION: Final rule.

SUMMARY: The Department of the Interior is issuing a final rule to amend its regulations to exempt certain records

in the BSEE–01, Investigations Case Management System, from one or more provisions of the Privacy Act because of civil and administrative law enforcement requirements.

DATES: This final rule is effective January 10, 2020.

FOR FURTHER INFORMATION CONTACT: Rowena Dufford, Associate Privacy Officer, Bureau of Safety and Environmental Enforcement, 45600 Woodland Road, Mail Stop VAE–MSD, Sterling, VA 20166, *privacy@bsee.gov* or (703) 787–1257.

SUPPLEMENTARY INFORMATION:

Background

The Department of the Interior (DOI) published a notice of proposed rulemaking in the **Federal Register** at 81 FR 67267, September 30, 2016, proposing to exempt certain records in the Investigations Case Management System (CMS) in accordance with 5 U.S.C. 552a(k)(2) of the Privacy Act of 1974, as amended, because of civil and administrative law enforcement requirements. The CMS system of records notice was published in the **Federal Register** at 81 FR 67386, September 30, 2016.

Comments were invited on the CMS system of records notice and the notice of proposed rulemaking. DOI received no comments on the system of records notice, but received two comments on the notice of proposed rulemaking. One commenter did not address the specific exemption but expressed concern that access to the records should be preserved and not taken away. The other commenter suggested the proposed rule contravenes the intent of the Privacy Act by creating a ''blanket [exemption]'' on disclosures of all types of agency records. The commenter further stated that by amending the rule, the Bureau of Safety and Environmental Enforcement indicates that all information in CMS is intended for law enforcement purposes and that there is concern that the release of this information could lead to witness tampering. As stated in the proposed rule and consistent with the Privacy Act, the exemptions from one or more provisions of the Privacy Act may be waived on a case-by-case basis where a release would not interfere with or adversely affect investigations or enforcement activities. These comments on the notice of proposed rulemaking require no revisions, therefore, DOI will implement the rulemaking as proposed.

Procedural Requirements

1. Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs in the Office of Management and Budget will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. DOI developed this rule in a manner consistent with these requirements.

2. Regulatory Flexibility Act

DOI certifies that this document will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*). This rule does not impose a requirement for small businesses to report or keep records on any of the requirements contained in this rule. The exemptions to the Privacy Act apply to individuals, and individuals are not covered entities under the Regulatory Flexibility Act.

3. Small Business Regulatory Enforcement Fairness Act (SBREFA)

This rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. This rule:

(a) Does not have an annual effect on the economy of $100 million or more.

(b) Will not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions.

(c) Does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises.

4. Unfunded Mandates Reform Act

This rule does not impose an unfunded mandate on State, local, or tribal governments in the aggregate, or on the private sector, of more than $100 million per year. The rule does not have a significant or unique effect on State, local, or tribal governments or the private sector. This rule makes only minor changes to 43 CFR part 2. A statement containing the information required by the Unfunded Mandates Reform Act (2 U.S.C. 1531 *et seq.*) is not required.

5. Takings (E.O. 12630)

In accordance with Executive Order 12630, the rule does not have significant takings implications. The rule is not a governmental action capable of interference with constitutionally protected property rights. This rule makes only minor changes to 43 CFR part 2. A takings implication assessment is not required.

6. Federalism (E.O. 13132)

In accordance with Executive Order 13132, this rule does not have any federalism implications to warrant the preparation of a Federalism Assessment. The rule is not associated with, nor will it have substantial direct effects on the States, on the relationship between the National Government and the States, or on the distribution of power and responsibilities among the various levels of government. A Federalism Assessment is not required.

7. Civil Justice Reform (E.O. 12988)

This rule complies with the requirements of Executive Order 12988. Specifically, this rule:

(a) Does not unduly burden the judicial system.

(b) Meets the criteria of section 3(a) requiring that all regulations be reviewed to eliminate errors and ambiguity and be written to minimize litigation; and

(c) Meets the criteria of section 3(b)(2) requiring that all regulations be written in clear language and contain clear legal standards.

8. Consultation With Indian Tribes (E.O. 13175)

In accordance with Executive Order 13175, the Department of the Interior has evaluated this rule and determined that it would have no substantial effects on federally recognized Indian Tribes.

9. Paperwork Reduction Act

This rule does not require an information collection from 10 or more parties and a submission under the

Paperwork Reduction Act is not required.

10. National Environmental Policy Act (NEPA) of 1969

This rule does not constitute a major Federal Action significantly affecting the quality of the human environment. A detailed statement under the National Environmental Policy Act of 1969 (NEPA) is not required because the rule is covered by a categorical exclusion. This rule meets the criteria set forth in 43 CFR 46.210(i), 516 Departmental Manual 15.4C(1), and the BSEE Interim NEPA Policy Document 2013–09, for a categorical exclusion. The rule's administrative effects are to exempt CMS from certain provisions of the Privacy Act pursuant to 5 U.S.C. 552a(k)(2) because of civil and administrative law enforcement requirements and therefore would not have any environmental impacts. BSEE also analyzed this rule to determine if it involves any of the extraordinary circumstances set forth in 43 CFR 46.215 that would require an environmental assessment or an environmental impact statement for actions otherwise eligible for a categorical exclusion. BSEE concluded that this rule does not meet any of the criteria for extraordinary circumstances.

11. Data Quality Act

In developing this rule, there was no need to conduct or use a study, experiment, or survey requiring peer review under the Data Quality Act (Pub. L. 106–554).

12. Effects on Energy Supply (E.O. 13211)

This rule is not a significant energy action under the definition in Executive Order 13211, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. A Statement of Energy Effects is not required.

13. Clarity of This Regulation

We are required by Executive Order 12866 and 12988, the Plain Writing Act of 2010 (H.R. 946), and the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means each rule we publish must:

—Be logically organized;
—Use the active voice to address readers directly;
—Use clear language rather than jargon;
—Be divided into short sections and sentences; and
—Use lists and tables wherever possible.

List of Subjects in 43 CFR Part 2

Administrative practice and procedure, Confidential information, Courts, Freedom of Information Act, Privacy Act.

For the reasons stated in the preamble, the Department of the Interior amends 43 CFR part 2 as follows:

PART 2—FREEDOM OF INFORMATION ACT; RECORDS AND TESTIMONY

■ 1. The authority citation for part 2 continues to read as follows:

Authority: 5 U.S.C. 301, 552, 552a, 553; 31 U.S.C. 3717; 43 U.S.C. 1460, 1461.

■ 2. Amend § 2.254 by adding paragraph (b)(18) to read as follows:

§ 2.254 Exemptions.

* * * * *

(b) * * *

(18) Investigations Case Management System (CMS), BSEE–01.

* * * * *

Teri Barnett,

Departmental Privacy Officer, Department of the Interior.

[FR Doc. 2019–28237 Filed 1–9–20; 8:45 am]

BILLING CODE 4310–VH–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 27

[WT Docket No. 18–120]

Transforming the 2.5 GHz Band

AGENCY: Federal Communications Commission.

ACTION: Correcting amendments.

SUMMARY: The Federal Communications Commission (FCC or Commission) is correcting final rules that appeared in the **Federal Register** on October 25, 2019. The published rules contained language stating that certain rules were not currently effective, because the FCC was awaiting Paperwork Reduction Act approval from the Office of Management and Budget (OMB). In fact, OMB had previously granted Paperwork Reduction Act approval, and the language in question was unnecessary. By correcting these amendments, the FCC removes unnecessary rules.

DATES: Effective January 10, 2020.

FOR FURTHER INFORMATION CONTACT: John Schauble of the Wireless Telecommunications Bureau, Broadband Division, at (202) 418–0797 or *John.Schauble@fcc.gov.*

SUPPLEMENTARY INFORMATION: For the reason stated in the summary, the Commission removes 47 CFR 27.14(v) and 27.1204(f), which were erroneously added in final rules published on October 25, 2019 (84 FR 57343).

List of Subjects in 47 CFR Part 27

Communications common carriers, Communications equipment.

Accordingly, 47 CFR part 27 is corrected by making the following correcting amendments:

PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

■ 1. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

§ 27.14 [Amended]

■ 2. In § 27.14, remove paragraph (v).

§ 27.1204 [Amended]

■ 3. In § 27.1204, remove paragraph (f).

Federal Communications Commission.

Cecilia Sigmund,

Federal Register Liaison Officer, Office of the Secretary.

[FR Doc. 2019–27923 Filed 1–9–20; 8:45 am]

BILLING CODE 6712–01–P

Proposed Rules

Federal Register
Vol. 85, No. 7
Friday, January 10, 2020

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF THE TREASURY

Office of the Comptroller of the Currency

12 CFR Part 25

[Docket ID OCC–2019–0029]

Community Reinvestment Act Regulations; Request for Public Input

AGENCY: Office of the Comptroller of the Currency (OCC), Treasury.

ACTION: Request for information.

SUMMARY: On January 9, 2020, the OCC and the Federal Deposit Insurance Corporation (the agencies) published a notice of proposed rulemaking that would amend their regulations implementing the Community Reinvestment Act (CRA). The OCC seeks public input with this request for information to assist in determining how the proposed rule might be revised to ensure that the final rule better achieves the statute's purpose of encouraging banks to help serve their communities by making the framework more objective, transparent, consistent, and easy to understand. Specifically, this request for information seeks bank-specific data and information to supplement currently-available data and to inform potential revisions to modernize and strengthen the CRA regulatory framework.

DATES: Comments should be submitted by March 10, 2020.

ADDRESSES: You may submit comments to the OCC by any of the methods set forth below. Commenters are encouraged to submit comments through the Federal eRulemaking Portal or email, if possible. Please use the title ''Community Reinvestment Act; Request for Information'' to facilitate the organization and distribution of the comments. You may submit comments by any of the following methods:

- *Federal eRulemaking Portal—''Regulations.gov'':* Go to *www.regulations.gov*. Enter ''Docket ID OCC–2019–0029'' in the Search Box and click ''Search.'' Click on ''Comment Now'' to submit public comments.
- Click on the ''Help'' tab on the *Regulations.gov* home page to get information on using *Regulations.gov*, including instructions for submitting public comments.
- *Email: rfi.cra@occ.treas.gov*.
- *Mail:* Chief Counsel's Office, Attention: RFI CRA Comment Processing, Office of the Comptroller of the Currency, 400 7th Street SW, Suite 3E–218, Washington, DC 20219.
- *Hand Delivery/Courier:* 400 7th Street SW, Suite 3E–218, Washington, DC 20219.

Instructions: You must include ''OCC'' as the agency name and ''Docket ID OCC–2019–0029'' in your comment.

In general, the OCC will enter all comments received into the docket and publish the comments on the *Regulations.gov* website without change, including any business or personal information that you provide such as name and address information, email addresses, or phone numbers. Comments received, including attachments and other supporting materials, are part of the public record and subject to public disclosure.

Respondents may designate information as confidential or request confidential treatment. The OCC will treat confidential commercial information submitted to the agency in accordance with 12 CFR 4.16 consistent with *Food Marketing Institute* v. *Argus Leader Media,* 139 S.Ct. 2356, 2363 (2019) and applicable guidance issued by the Department of Justice at *https://www.justice.gov/oip/step-step-guide-determining-if-commercial-or-financial-information-obtained-person-confidential*. The OCC may aggregate the information, use the aggregated information, and make the aggregated information public.

You may review comments and other related materials that pertain to this rulemaking action by any of the following methods:

- *Viewing Comments Electronically:* Go to *www.regulations.gov*. Enter ''Docket ID OCC–2019–0029'' in the Search box and click ''Search.'' Click on ''Open Docket Folder'' on the right side of the screen. Comments and supporting materials can be viewed and filtered by clicking on ''View all documents and comments in this docket'' and then using the filtering tools on the left side of the screen.
- Click on the ''Help'' tab on the *Regulations.gov* home page to get information on using *Regulations.gov*. The docket may be viewed after the close of the comment period in the same manner as during the comment period.
- *Viewing Comments Personally:* You may personally inspect comments at the OCC, 400 7th Street SW, Washington, DC 20219. For security reasons, the OCC requires that visitors make an appointment to inspect comments. You may do so by calling (202) 649–6700 or, for persons who are deaf or hearing impaired, TTY, (202) 649–5597. Upon arrival, visitors will be required to present valid government-issued photo identification and submit to security screening in order to inspect comments.

FOR FURTHER INFORMATION CONTACT: Ioan Voicu, Director, Compliance Risk Analysis Division, at (202) 649–5550; or Daniel Sufranski, Attorney, or Jean Xiao, Attorney, Chief Counsel's Office, (202) 649–5490; Office of the Comptroller of the Currency, 400 7th Street SW, Washington, DC 20219. For persons who are deaf or hearing impaired, TTY users may contact (202) 649–5597.

SUPPLEMENTARY INFORMATION:

I. Background

On January 9, 2020, the agencies issued a notice of proposed rulemaking that would make comprehensive changes to the CRA regulatory framework to ensure that the CRA remains a relevant and powerful tool for encouraging banks to serve the needs of their communities, particularly low- or moderate-income (LMI) neighborhoods, consistent with the banks' safe and sound operations. As the proposed rule describes, there is broad recognition that the CRA regulations should be improved both in design and in application. Accordingly, the agencies proposed to modernize and strengthen the CRA regulatory framework to better achieve the underlying statutory purpose of encouraging banks to help serve their communities by making the framework more objective, transparent, consistent, and easy to understand. To accomplish these goals, the proposed rule seeks to strengthen the CRA regulations in four key areas by (1) clarifying which activities qualify for CRA credit; (2) updating where activities count for CRA credit; (3) creating a more transparent and objective method for measuring CRA

performance; and (4) providing for more transparent, consistent, and timely CRA-related data collection, recordkeeping, and reporting.

II. Request for Information

The OCC gives notice that it seeks public input to assist in determining how the proposed rule should be revised to ensure that the final rule better achieves the statute's purpose of encouraging banks to help serve their communities by making the framework more objective, consistent, and transparent. As discussed in the proposed rule, the agencies analyzed currently-available historical data to determine the empirical benchmarks and thresholds that would be used in the general performance standards in § 25.12 of the proposed rule. Specifically, the agencies reviewed the available Home Mortgage Disclosure Act (HMDA) data on home mortgages to LMI borrowers, Call Report data on the on-balance sheet value of home mortgages, consumer loans, small business and small farm loans, and credit bureau data on the outstanding balances of consumer loans. The agencies analyzed these sources together, collected additional information about community development investments from historical performance evaluations, and made some assumptions to estimate what banks' average CRA evaluation measures would have been from 2011–2017 under the proposed rule's framework.

This request for information seeks bank-specific data and information to supplement the agencies' analyses and currently-available data. Specifically, it requests four types of bank data or information: (1) Retail domestic deposit activities; (2) qualifying activity data; (3) data on retail loans originated and sold within 90 days; and (4) other retail loan data. This data should reflect the past three years. Responses to this request are informed by a review of the proposed rule.

Respondents may answer all or some of the requests for information below. All information should be in a comma delimited file, and dollar values should be in 1,000s. Standard Federal Information Processing Standards (FIPS) codes should be used for geographic data, and the following codes should be used, unless otherwise instructed:

- –99—Information not available
- –98—Not applicable (*e.g.,* geographic area is not part of a facility-based assessment area)
- –9999—Not part of a metropolitan statistical area

The OCC is particularly interested in receiving information and supporting data on the following topics and questions:

Retail Domestic Deposit Activities

As discussed in the proposed rule, a bank's main office and deposit-taking facility locations and retail domestic deposit data would be required to determine its assessment area delineations, its ratings, and the benchmarks associated with ratings in §§ 25.08 and 25.11 of the proposed rule. The following data will supplement existing data and assist the OCC in, among other things, making potential revisions to the proposed thresholds in § 25.12.

Questions and Requests Regarding Retail Domestic Deposit Activities

1. What are the bank's total amount of retail domestic deposits received, by county for each quarter-end? As discussed in § 25.03 of the proposed rule, retail domestic deposits would include deposits by individuals, partnerships, and corporations, as reported on Schedule RC–E, item 1, of the Call Report other than a deposit that is obtained, directly or indirectly, from or through the mediation or assistance of a deposit broker as that term is defined in section 29 of the Federal Deposit Insurance Act (12 U.S.C. 1831f(g)). The county should be assigned based on the accountholder's physical address, not the location of the branch that accepted the deposit.

2. Assign and provide a unique numerical identification (ID) to each facility-based assessment area, as defined in the proposed rule. As discussed in § 25.08 of the proposed rule, a bank's main office, branches, and non-branch deposit-taking facilities, as well as the surrounding geographies in which the bank has originated or purchased a substantial portion of its loans, would be included in the facility-based assessment area. Facility based assessment areas would be comprised of one of the following that include one or more of the bank's main office, branches, and non-branch deposit-taking facilities: (1) A whole metropolitan statistical area (MSA); (2) the whole nonmetropolitan area of a state; (3) one or more whole, contiguous metropolitan divisions (MD) in a single MSA; or (4) one or more whole, contiguous counties or county equivalents in a single MSA or nonmetropolitan area.

3. For the data above, provide county, MD/MSA, and State standard FIPS Codes.

4. Are there burdens associated with collecting or reporting the data described in this section?

TABLE 1, COLUMNS 1–6—DEPOSIT AND ASSESSMENT AREA ID DATA BY COUNTY, QUARTER

	Data field	Comments
Column 1	County	FIPS code.
Column 2	MD/MSA	FIPS code.
Column 3	State	FIPS code.
Column 4	Facility-based Assessment Area Number	Numeric indicator, created by Bank, that uniquely identifies each facility-based assessment area. Use code –98 if a county is not in a facility-based assessment area.
Column 5	Quarter-end/Year	Specify date of data snapshot, *e.g.,* as reported on Q4 call report. Q1YYYY: Jan1–March30 Q2YYYY: April 1–June 30 Q3YYYY: July1–Sept 30 Q4YYYY: Oct1–Dec 31.
Column 6	Quarter-end Total Retail Domestic Deposits received from the county.	$ value of retail domestic deposits in the county. County should be assigned based on depositor/business physical address (not location of the branch that holds the deposit).

Total Qualifying Activities

As discussed in the proposed rule and this request for information, the dollar value of a bank's qualifying activities would be required to determine a bank's ratings and to set the benchmarks associated with ratings in § 25.12. The following data will supplement existing data and assist the OCC in, among other things, making potential revisions to the appropriate thresholds in the proposed rule.

Questions and Requests Regarding Total Qualifying Activities

5. Calculate and report the sum, at the county level, of all quarter-end balances for each type of qualifying loan or community development (CD) investment held on the balance sheet. Calculate and report the sum of the associated dollar value, at the county level, for other CD investments (*i.e.,* monetary and in-kind donations) and CD services made or provided in each quarter. Exclude from the calculation any loans that were sold within 90 days of origination by the bank. Qualifying activity would mean an activity that meets the criteria in § 25.04 of the proposed rule. Qualifying activities would include qualifying loans, CD investments, and CD services. Qualifying loan means a retail loan, as defined in § 25.03, that meets the criteria in § 25.04(b) or a CD loan, as defined in § 25.03, that meets the criteria in § 25.04(c). CD investments are defined in § 25.03, which would include a requirement that the investment meets the criteria in § 25.04(c). CD services are defined in § 25.03, which would include a requirement that the service meets the criteria in § 25.04(c).

6. Are there burdens associated with collecting or reporting the data described in this section?

TABLE 1, COLUMNS 7–21—THE QUARTER-END DOLLAR VALUE OF EACH QUALIFYING ACTIVITY BY COUNTY, QUARTER

	Data field	Comments
Column 7	Quarter-end, county-level sum of balances of qualifying home mortgages.	
Column 8	Quarter-end, county-level sum of balances of qualifying auto loans.	
Column 9	Quarter-end, county-level sum of balances of qualifying credit cards.	
Column 10	Quarter-end, county-level sum of balances of other revolving lines of credit.	
Column 11	Quarter-end, county-level sum of balances of qualifying other consumer loans.	Qualifying loans that are not credit cards or other revolving lines of credit, auto loans, or home mortgages.
Column 12	Quarter-end, county-level sum of balances of qualifying small loans to businesses in LMI census tracts.	
Column 13	Quarter-end, county-level sum of balances of qualifying small loans to farms in LMI census tracts.	
Column 14	Quarter-end, county-level sum of balances of qualifying small loans to small businesses in non-LMI census tracts.	
Column 15	Quarter-end, county-level sum of balances of qualifying small loans to small farms in non-LMI census tracts.	
Column 16	Quarter-end, county-level sum of balances of qualifying CD loans.	
Column 17	Quarter-end, county-level sum of balances of qualifying CD investments held on balance sheet, excluding mortgage-backed securities and municipal bonds.	
Column 18	Quarter-end, county-level sum of balances of qualifying mortgage backed securities.	
Column 19	Quarter-end, county-level sum of balances of qualifying municipal revenue bonds.	
Column 20	County-level sum of qualifying services performed during the quarter.	
Column 21	County-level sum of qualifying monetary or in-kind donations not included in CD Investments held on balance sheet that were extended during the quarter.	

Note: Only calculate the dollar value of qualifying loans not sold within 90 days of origination. When determining whether a loan is a qualifying loan, if borrower income is not available, use the income level of the census tract associated with the loan (*e.g.,* if the loan is in a low or moderate-income tract, assume that the borrower has low or moderate income); and in the data description add an explanatory note indicating for what types of loans this assumption was used.

Qualifying Retail Loans Originated and Sold Within 90 Days

As discussed in the proposed rule, the value of a bank's qualifying activities would be required to determine a bank's ratings and to set the benchmarks associated with ratings in § 25.12. Retail loans originated and sold within 90 days that are qualifying activities would be valued at 25 percent of their origination value under § 25.06(d)(2). The following data will supplement existing data and assist the OCC in, among other things, making potential revisions to the appropriate thresholds in proposed rule.

Questions and Requests Regarding Qualifying Retail Loans Originated and Sold Within 90 Days

7. Report all retail loans that are qualifying activities under § 25.04 and that are originated and sold within 90 days of origination.

8. Report the balance at origination of all retail loans reported in request 7.

9. Report the origination date of each retail loan reported in request 7.

10. Report the sell date of each retail loan reported in 7.

11. Instead of reporting the information in questions 7 through 10, report the aggregate balance at origination of all retail loans that are qualifying activities under § 25.04 and

that are originated and sold within 90 days of origination throughout the year.

12. What are the burdens associated with collecting or reporting the data described in this section? How do the burdens differ if the data is collected at the loan level versus the aggregate level?

TABLE 2—FULL LIST OF QUALIFYING RETAIL LOANS ORIGINATED AND SOLD WITHIN 90 DAYS

	Data field	Comments
Column 1	Loan ID.	
Column 2	County	FIPS code.
Column 3	MD/MSA	FIPS code.
Column 4	State	FIPS code.
Column 5	Facility-based Assessment Area Number	Numeric indicator, created by Bank, that uniquely identifies each facility-based assessment area. Use code -98 if a loan is not within a facility-based assessment area.
Column 6	Loan type	Mortgage, Credit card, Auto, Other, etc.
Column 7	Balance at origination for the qualifying retail loan	
Column 8	Origination date of the qualifying retail loan	DDMMYYY.
Column 9	Sell date of the qualifying loan	DDMMYYYY.
Column 10	Income assumption indicator	Yes or 1 if borrower income is based on tract income and No or 0 if actual borrower income is used.

Note: When determining whether a loan is a qualifying loan, if borrower income is not available, use the income level of the census tract associated with the loan (*e.g.,* if the loan is in a low or moderate-income tract, assume that the borrower has low or moderate income) and add a flag indicating whether this assumption was used.

Volume of Retail Loans by Census Tract

As discussed in the proposed rule and this request for information, banks would be evaluated under retail lending distribution tests described in § 25.11 of the proposed rule. The following data will supplement existing data relevant to the proposed retail lending distribution tests.

Questions and Requests Regarding Volume of Retail Loans by Census Tract

12. Calculate the total number and dollar volume, at the census tract level, of all new retail loans originated for each of the bank's retail loan product lines. Retail lending product line would be defined in § 25.03 to include home mortgage loans, small loans to businesses, small loans to farms, automobile loans, credit card loans, other revolving credit lines, and other consumer loans (as those terms would be defined in under the proposed rule).

13. For product lines other than small loans to businesses and small loans to farms, calculate the total number, at the census tract level, of all new retail loans originated for each retail loan product line to LMI individuals or families. For the small loans to businesses and small loans to farms product lines, as defined in § 25.04, calculate, at the census tract level, the number of small loans originated to small businesses and to small farms, respectively.

14. Using the same set of unique assessment area IDs as in Table 1, identify each facility-based assessment area.

15. Report the Census Tract, County, MSA/MD, State.

16. Are there burdens associated with collecting or reporting the data described in this section?

TABLE 3—YEARLY VOLUME OF RETAIL LOAN ORIGINATIONS

	Data Field	Comments
Column 1	Census Tract	FIPS code.
Column 2	County	FIPS code.
Column 3	MD/MSA	FIPS code.
Column 4	State	FIPS code.
Column 5	Facility-based Assessment Area Number	Numeric indicator, created by Bank, that uniquely identifies each facility-based assessment area. Use code -98 if a county is not in a facility-based assessment area.
Column 6	Number of home mortgage loan originations in the tract to LMI individuals or families.	
Column 7	Number of auto loan originations in the tract to LMI individuals or families.	
Column 8	Number of credit card accounts in the tract to LMI individuals or families.	
Column 9	Number of other revolving credit lines in the tract to LMI individuals or families.	
Column 10	Number of other consumer loan originations in the tract to LMI individuals or families.	
Column 11	Number of originations of small loans in the tract to small businesses.	
Column 12	Number of originations of small loans in the tract to small farms.	
Column 13	Number of home mortgage loan originations in the tract	
Column 14	Number of auto loan originations in the tract	
Column 15	Number of credit card accounts in the tract	
Column 16	Number of other revolving credit lines in the tract	
Column 17	Number of other consumer loan originations in the tract	

TABLE 3—YEARLY VOLUME OF RETAIL LOAN ORIGINATIONS—Continued

	Data Field	Comments
Column 18	Number of originations of small loans to businesses in the tract.	
Column 19	Number of originations of small loans to farms in the tract	
Column 20	Dollar volume of home mortgage loan originations in the tract.	
Column 21	Dollar volume of auto loan originations in the tract	
Column 22	Dollar volume of credit card accounts in the tract	
Column 23	Dollar volume of other revolving credit lines in the tract	
Column 24	Dollar volume of other consumer loan originations in the tract.	
Column 25	Dollar volume of originations of small loans to businesses in the tract.	
Column 26	Dollar volume of originations of small loans to farms in the tract.	

Dated: December 13, 2019.

Joseph M. Otting,

Comptroller of the Currency.

[FR Doc. 2019–27290 Filed 1–9–20; 8:45 am]

BILLING CODE 4810–33–P

SMALL BUSINESS ADMINISTRATION

13 CFR Parts 121, 124, 125, 126, 127, and 134

RIN 3245–AG94

Consolidation of Mentor Protégé Programs and Other Government Contracting Amendments; Extension of Comment Period

AGENCY: U.S. Small Business Administration.

ACTION: Proposed rule; extension of comment period.

SUMMARY: The U.S. Small Business Administration (SBA) is extending the comment period for the proposed rule published in the **Federal Register** on November 8, 2019. The comment period is scheduled to close on January 17, 2020. SBA is extending the comment period an additional 21 days in response to the significant level of interest generated by the proposed rule and requests from multiple stakeholders for an extension. Given the scope of the proposed rule and the nature of the issues raised by the comments received to date, SBA believes that affected businesses need more time to review the proposal and prepare their comments.

DATES: The comment period for the proposed rule published on November 8, 2019 (84 FR 60846) is extended to February 7, 2020.

ADDRESSES: You may submit comments, identified by RIN 3245–AG94 by any of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the instructions for submitting comments.
- *Mail, for paper, disk, or CD/ROM submissions:* Brenda Fernandez, U.S. Small Business Administration, Office of Policy, Planning and Liaison, 409 Third Street SW, 8th Floor, Washington, DC 20416.
- *Hand Delivery/Courier:* Brenda Fernandez, U.S. Small Business Administration, Office of Policy, Planning and Liaison, 409 Third Street SW, 8th Floor, Washington, DC 20416.

SBA will post all comments on *http://www.regulations.gov.* If you wish to submit confidential business information (CBI) as defined in the User Notice at *http://www.regulations.gov,* please submit the information to Brenda Fernandez, U.S. Small Business Administration, Office of Policy, Planning and Liaison, 409 Third Street SW, 8th Floor, Washington, DC 20416, or send an email to *brenda.fernandez@sba.gov.* Highlight the information that you consider to be CBI and explain why you believe SBA should hold this information as confidential. SBA will review the information and make the final determination of whether it will publish the information.

FOR FURTHER INFORMATION CONTACT: Brenda Fernandez, U.S. Small Business Administration, Office of Policy, Planning and Liaison, 409 Third Street SW, Washington, DC 20416; (202) 205–7337; *brenda.fernandez@sba.gov.*

SUPPLEMENTARY INFORMATION: In the rule published on November 8, 2019 (84 FR 60846), SBA proposed revisions to its regulations to remove duplicative functions within SBA, reduce unnecessary or excessive burdens on 8(a) Participants, and clarify SBA's intent in other related regulatory provisions to eliminate confusion among small businesses and procuring activities. Specifically, the rule would merge the 8(a) Business Development (BD) Mentor-Protégé Program and the All Small Mentor-Protégé Program. This rule would also eliminate the requirement that 8(a) Participants seeking to be awarded an 8(a) contract as a joint venture submit the joint venture agreement to SBA for review and approval prior to contract award. In addition, except for orders and Blanket Purchase Agreements issued under the General Services Administration's Federal Supply Schedule Program, the rule would require a business concern to recertify its size and/or socioeconomic status for all set-aside orders under unrestricted multiple award contracts (MACs). The rule would also require a business concern to recertify its socioeconomic status for all set-aside orders where the required socioeconomic status for the order differs from that of the underlying set-aside MAC contract (*e.g.,* HUBZone set-aside order against a small business set-aside MAC). Finally, except for orders or Blanket Purchase Agreements issued under any Federal Supply Schedule contract, the rule would permit size and/or socioeconomic protests at the order level for set-aside orders issued against unrestricted MACs, or for set-aside orders based on a different socioeconomic status from the underlying set-aside MAC.

Dated: January 3, 2020.

Barbara E. Carson,

Deputy Associate Administrator, Office of Government Contracting and Business Development.

[FR Doc. 2020–00169 Filed 1–9–20; 8:45 am]

BILLING CODE P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2019–1071; Product Identifier 2019–NM–165–AD]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for all The Boeing Company Model 737–900ER series airplanes. This proposed AD was prompted by reports of significant corrosion of electrical connectors located in the main landing gear (MLG) wheel well. This proposed AD would require repetitive records checks to determine exposure to certain deicing fluids or repetitive inspections for corrosion of the electrical connectors, and corrective actions if necessary. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by February 24, 2020.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110–SK57, Seal Beach, CA 90740–5600; telephone 562–797–1717; internet *https://www.myboeingfleet.com.* You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195. It is also available on the internet at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2019–1071.

Examining the AD Docket

You may examine the AD docket on the internet at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2019–1071; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Julio C. Alvarez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3657; email: *julio.c.alvarez@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the **ADDRESSES** section. Include ''Docket No. FAA–2019–1071; Product Identifier 2019–NM–165–AD'' at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments we receive, without change, to *https://www.regulations.gov,* including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this NPRM.

Discussion

The FAA has received reports indicating the presence of significant corrosion of electrical connectors located in the MLG wheel well of airplanes that land on runways treated with deicing fluids containing potassium formate or potassium acetate. Corrosion and subsequent moisture ingress may lead to electrical shorting of the connectors. This condition, if not addressed, can cause incorrect function of critical systems necessary for safe flight and landing.

Related Rulemaking

AD 2005–18–23, Amendment 39–14264 (70 FR 54253, September 14, 2005) (''AD 2005–18–23''), applies to Boeing Model 737–600, –700, –700C, –800, and –900 series airplanes, and addresses the same unsafe condition identified in this NPRM. Model 737–900ER series airplanes were not type certificated at the time AD 2005–18–23 was issued. The FAA has therefore determined that this NPRM is necessary to mandate the same requirements on Model 737–900ER series airplanes.

Related Service Information Under 1 CFR Part 51

This proposed AD would require Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003, which the Director of the Federal Register approved for incorporation by reference as of October 19, 2005 (70 FR 54253, September 14, 2005). This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the **ADDRESSES** section.

FAA's Determination

The FAA is proposing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would require repetitive records checks to determine exposure to certain deicing fluids or repetitive inspections for corrosion of electrical connectors, and applicable corrective actions.

The phrase ''corrective actions'' is used in this proposed AD. Corrective actions correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

Differences Between This Proposed AD and the Service Information

The effectivity of Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003, does not specifically identify Model 737–900ER series airplanes; that airplane model was not type certificated at the time the service information was issued. The service information does, however, identify the line numbers for Model 737–900ER series airplanes, all of which are in Group 3, so the actions of that service bulletin are appropriate and can be accomplished on those airplanes.

Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003, differs from this proposed AD in the cumulative areas of backshell corrosion that need corrective action,

and in the compliance time for the respective corrective actions, which are specified in paragraphs (g)(2)(i) through (ii) of this proposed AD. These differences have been coordinated with Boeing. The proposed requirements correspond to three alternative methods of compliance approved for AD 2005–18–23 and reflect the relief provided for AD 2005–18–23.

Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003, specifies that airplanes exposed to affected runway deicing fluids be inspected for corroded electrical connectors within 12 months. AD 2005–18–23 instead requires initially determining the airplane's exposure to affected runway deicing fluids within 12 months, and allows an additional 90 days to inspect for corrosion. For AD 2005–18–23, the FAA had determined that the additional 90 days for the inspection represented an acceptable interval of time for affected airplanes to operate without jeopardizing safety. Therefore, since the unsafe condition and airplane design are the same in AD 2005–18–23 and this NPRM, the FAA has determined that 90 days is an appropriate compliance time for the initial inspection in this proposed AD.

Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003, and AD 2005–18–23 specify repeating the inspection at 12-month intervals. However, the FAA determined that a longer interval would provide an acceptable level of safety. The FAA therefore issued alternative methods of compliance (AMOCs) for AD 2005–18–23 allowing this inspection interval to be increased to 24 months. Therefore, this proposed AD specifies a repetitive inspection interval of 24 months.

Costs of Compliance

The FAA estimates that this proposed AD affects 346 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

ESTIMATED COSTS

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Repetitive records check	1 work-hour × $85 per hour = $85 per inspection cycle.	$0	$85 per inspection cycle.	Up to $29,410 per inspection cycle.
Repetitive detailed inspection.	3 work-hours × $85 per hour = $255 per inspection cycle.	0	$255 per inspection cycle.	Up to $88,230 per inspection cycle.

The FAA estimates the following costs to do any necessary repairs or replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of aircraft that might need these repairs or replacements:

ON-CONDITION COSTS

Action	Labor cost	Parts cost	Cost per product
Cleaning or replacement	Up to 5 work-hours × $85 per hour = Up to $425	Up to $831	Up to $1,256.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: ''General requirements.'' Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This proposed AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a ''significant regulatory action'' under Executive Order 12866,

(2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

The Boeing Company: Docket No. FAA–2019–1071; Product Identifier 2019–NM–165–AD.

(a) Comments Due Date

The FAA must receive comments by February 24, 2020.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all The Boeing Company Model 737–900ER series airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 24, Electrical power.

(e) Unsafe Condition

This AD was prompted by reports of significant corrosion of electrical connectors located in the main landing gear (MLG) wheel well. The FAA is issuing this AD to address corrosion and subsequent moisture ingress that may lead to electrical shorting of the connectors and incorrect functioning of critical systems necessary for safe flight and landing.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

Within 12 months after the effective date of this AD: Do the actions required by paragraph (g)(1) or (2) of this AD.

(1) Determine airplane exposure to runway deicing fluids containing potassium formate or potassium acetate by reviewing airport data on the types of components in the deicing fluid used at airports that support airplane operations.

(i) If the airplane has not been exposed: Repeat the requirements specified in paragraph (g)(1) of this AD thereafter at intervals not to exceed 24 months.

(ii) If the airplane has been exposed: Within 90 days after that determination is made, do the inspection required by paragraph (g)(2) of this AD. Repeat the inspection thereafter at intervals not to exceed 24 months.

(2) Do a detailed inspection of the electrical connectors, including the contacts and backshells of the line replaceable unit (LRU) in the wheel well of the MLG, for corrosion in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003. Perform applicable corrective actions at the applicable times, as specified in paragraphs (g)(2)(i) through (iii) of this AD, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737–24A1148, Revision 1, dated July 10, 2003. Repeat the inspection thereafter at intervals not to exceed 24 months. For the purposes of this AD, a detailed inspection is defined as an intensive visual examination of a specific structural area, system, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at intensity deemed appropriate by the inspector. Inspection aids such as mirror, magnifying lenses, etc., may be used. Surface cleaning and elaborate access procedures may be required.

(i) If the total backshell surface area corrosion is 10 percent or less, clean the backshell(s) before further flight.

(ii) If the total backshell surface area corrosion is greater than 10 percent but less than 20 percent, replace the connectors and backshells within 30 days after the detailed inspection.

(iii) If the total backshell surface area corrosion is 20 percent or more, replace the connectors and backshells before further flight.

(h) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (i)(1) of this AD. Information may be emailed to: *9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.*

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved previously for AD 2005–18–23, Amendment 39–14264 (70 FR 54253, September 14, 2005) (''AD 2005–18–23''), are approved as AMOCs for the corresponding provisions of this AD.

(i) Related Information

(1) For more information about this AD, contact Julio C. Alvarez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3657; email: *julio.c.alvarez@faa.gov.*

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110–SK57, Seal Beach, CA 90740–5600; telephone 562–797–1717; internet *https://www.myboeingfleet.com.* You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

Issued on December 26, 2019.

Jeffrey E. Duven,

Director, System Oversight Division, Aircraft Certification Service.

[FR Doc. 2019–28469 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2019–0919; Product Identifier 2019–NE–24–AD]

RIN 2120–AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for all General Electric Company (GE) CF34–8C1, CF34–8C5, CF34–8C5A1, CF34–8C5B1, CF34–8C5A2, CF34–8C5A3, CF34–8E2, CF34–8E2A1, CF34–8E5, CF34–8E5A1, CF34–8E5A2, CF34–8E6, and CF34–8E6A1 turbofan engine models with a certain outer shell combustion liner (combustion outer liner shell) installed. This proposed AD was prompted by two in-flight engine shutdowns (IFSDs) that occurred as a result of failures of the combustion outer liner shell. This proposed AD would require a borescope inspection (BSI) or visual inspection of the combustion outer liner shell and, depending on the results of the inspection, possible replacement of the combustion outer liner shell. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by February 24, 2020.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact General Electric Company, GE Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215; phone: 513–552–3272; email: *aviation.fleetsupport@ge.com.* You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781–238–7759.

Examining the AD Docket

You may examine the AD docket on the internet at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2019–0919; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Michael Richardson-Bach, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781–238–7747; fax: 781–238–7199; email: *michael.richardson-bach@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the **ADDRESSES** section. Include ''Docket No. FAA–2019–0919; Product Identifier 2019–NE–24–AD'' at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments received, without change, to *https://www.regulations.gov,* including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this NPRM.

Discussion

The FAA received reports of two IFSDs on GE CF34–8C and –8E turbofan engine models. These IFSDs were due to the cracking and collapsing of the combustion outer liner shell, which resulted in thermal distress of the high-pressure turbine and low-pressure turbine (LPT) including burn-through of the LPT case. This condition, if not addressed, could result in burn-through of the LPT case, engine fire, and damage to the airplane.

Related Service Information Under 1 CFR Part 51

The FAA reviewed GE Alert Service Bulletin (ASB) CF34–8C–AL S/B 72–A0335, dated June 27, 2019, and GE ASB CF34–8E–AL S/B 72–A0221, dated June 27, 2019. The ASBs, differentiated by GE CF34–8 turbofan engine model, describe procedures for performing a BSI of the combustion outer liner shell. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the **ADDRESSES** section.

FAA's Determination

The FAA is proposing this AD because it evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would require a BSI or visual inspection of the combustion outer liner shell and, depending on the results of the inspection, possible replacement of the combustion outer liner shell.

Costs of Compliance

The FAA estimates that this proposed AD affects 1,535 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

ESTIMATED COSTS

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
BSI or visually inspect the combustion outer liner shell.	3 work-hours × $85 per hour = $255	$0	$255	$391,425

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of engines that might need this replacement:

ON-CONDITION COSTS

Action	Labor cost	Parts cost	Cost per product
Replace the combustion outer liner shell	812 work-hours × $85 per hour = $69,020	$80,000	$149,020

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: ''General requirements.'' Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a ''significant regulatory action'' under Executive Order 12866,

(2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

General Electric Company: Docket No. FAA–2019–0919; Product Identifier 2019–NE–24–AD.

(a) Comments Due Date

The FAA must receive comments by February 24, 2020.

(b) Affected ADs

None.

(c) Applicability

This AD applies to General Electric Company (GE) CF34–8C1, CF34–8C5, CF34–8C5A1, CF34–8C5B1, CF34–8C5A2, CF34–8C5A3, CF34–8E2, CF34–8E2A1, CF34–8E5, CF34–8E5A1, CF34–8E5A2, CF34–8E6, and CF34–8E6A1 turbofan engine models with an outer shell combustion liner (combustion outer liner shell) part number (P/N) 4124T04G04, P/N 4124T04G05, or P/N 5159T35G02, installed.

(d) Subject

Joint Aircraft System Component (JASC) Code 7240, Turbine Engine Combustion Section.

(e) Unsafe Condition

This AD was prompted by two in-flight engine shutdowns (IFSDs) that occurred as a result of failures of the combustion outer liner shell. The FAA is issuing this AD to prevent failure of the combustion outer liner shell. The unsafe condition, if not addressed, could result in burn-through of the low-pressure turbine case, engine fire, and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For an affected engine with a combustion outer liner shell that on the effective date of this AD has accumulated 17,500 flight hours (FHs) or greater time since new (TSN), or time since repair (TSR), perform an initial borescope inspection (BSI) or visual inspection of the combustion outer liner shell within 500 engine flight hours (FHs) after the effective date of this AD.

(i) For GE CF34–8C engines, inspect using the Accomplishment Instructions, paragraphs 3.A.(4) and 3.A.(5), of GE Alert Service Bulletin (ASB) CF34–8C–AL S/B 72–A0335, dated June 27, 2019.

(ii) For GE CF34–8E engines, inspect using the Accomplishment Instructions, paragraphs 3.A.(4) and 3.A.(5), of GE ASB CF34–8E–AL S/B 72–A0221, dated June 27, 2019.

(2) For an affected engine with a combustion outer liner shell that on the effective date of this AD has accumulated 17,499 FHs or fewer TSN or TSR, within 500 engine FHs after the combustion outer liner shell has accumulated 17,500 FHs TSN or TSR, perform an initial BSI or visual inspection on the combustion outer liner shell.

(i) For GE CF34–8C engines, inspect using the Accomplishment Instructions, paragraphs 3.A.(4) and 3.A.(5), of GE ASB CF34–8C–AL S/B 72–A0335, dated June 27, 2019.

(ii) For GE CF34–8E engines, inspect using accomplishment instructions 3.A.(4) and 3.A.(5) of GE ASB CF34–8E–AL S/B 72–A0221, dated June 27, 2019.

(3) For an affected engine with a combustion outer liner shell for which it is not possible to determine the TSN or TSR, use the engine FHs since new to determine when to perform the BSI or visual inspection.

(4) After the effective date of this AD, and after the initial inspection required by paragraph (g)(1) or (2) of this AD, re-inspect the combustion outer liner shell using inspection criteria as follows:

(i) For GE CF34–8C engines, use Table 1 of GE ASB CF34–8C–AL S/B 72–A0335, dated June 27, 2019.

(ii) For GE CF34–8E engines, use Table 1 of GE ASB CF34–8E–AL S/B 72–A0221, dated June 27, 2019.

(h) Installation Prohibition

After the effective date of this AD, do not install a combustion outer liner shell with greater than 17,500 FHs TSN or TSR without first inspecting it in accordance with paragraph (g)(1) of this AD.

(i) Definitions

For the purpose of this AD, ''time since repair (TSR)'' is the amount of FHs accumulated on the combustion outer liner shell since performing GEK 105091 or GEK 112031, 72–44–06, REPAIR 023.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(1) of this AD. You may email your request to: *ANE-AD-AMOC@faa.gov.*

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

(1) For more information about this AD, contact Michael Richardson-Bach, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781–238–7747; fax: 781–238–7199; email: *michael.richardson-bach@faa.gov.*

(2) For service information identified in this AD, contact General Electric Company, GE Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215; phone: 513–552–3272; email: *aviation.fleetsupport@ge.com.* You may view this referenced service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781–238–7759.

Issued in Burlington, Massachusetts, on January 2, 2020.

Robert J. Ganley,

Manager, Engine & Propeller Standards Branch, Aircraft Certification Service.

[FR Doc. 2020–00020 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2019–1070; Product Identifier 2019–NM–178–AD]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 787–8 and 787–9 airplanes. This proposed AD was prompted by reports that the cabin air compressor (CAC) outlet check valve failed due to fatigue of the aluminum flappers, and exposed the Y-duct to temperatures above its design limit. This proposed AD would require installing new inboard and outboard CAC outlet check valves on the left-side and right-side cabin air conditioning and temperature control system (CACTCS) packs. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by February 24, 2020.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110–SK57, Seal Beach, CA 90740–5600; telephone 562–797–1717; internet *https://www.myboeingfleet.com.* You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195. It is also available on the internet at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2019–1070.

Examining the AD Docket

You may examine the AD docket on the internet at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2019–1070; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Allie Buss, Aerospace Engineer, Cabin Safety and Environmental Systems Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3564; email: *Allison.Buss@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the **ADDRESSES** section. Include ''Docket No. FAA–2019–1070; Product Identifier 2019–NM–178–AD'' at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments received, without change, to *https://www.regulations.gov,* including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this proposed AD.

Discussion

The FAA has received reports that the CAC outlet check valve failed due to fatigue of the aluminum flappers, and exposed the Y-duct to temperatures above its design limit. Operators have reported failures of the CAC outlet check valve caused by fatigue of the aluminum flappers due to increasing open/close cycles, induced by CAC surge. This can cause reverse flow through the broken check valve from the operational CAC. The reverse flow is recirculated through the operational CAC inlet ducting and reheating CAC air, leading to exposure of the Y-duct to temperatures above its design limit. This condition, if not addressed, could expose the flight deck and passenger cabin to smoke and fumes, and lead to reduced crew performance or produce passenger discomfort. Off gassed compounds could cause respiratory distress and could cause serious injury for an individual with a compromised respiratory system. The new check valve has an improved design with a stronger Corrosion Resistant Steel (CRES) housing and flappers, and an increased stopper contact area for better distribution of the flapper load.

Related Service Information Under 1 CFR Part 51

The FAA reviewed Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019. The service information describes procedures for installing new inboard and outboard CAC outlet check valves on the left-side and right-side CACTCS packs. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the **ADDRESSES** section.

FAA's Determination

The FAA is proposing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would require accomplishment of the actions identified as ''RC'' (required for compliance) in the Accomplishment Instructions of Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019, described previously.

For information on the procedures and compliance times, see this service information at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2019–1070.

Costs of Compliance

The FAA estimates that this proposed AD affects 90 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

ESTIMATED COSTS FOR REQUIRED ACTIONS

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replace CAC outlet check valves.	3 work-hours × $85 per hour = $255 per check valve.	$0	$255 per check valve ...	$22,950 per check valve.

According to the manufacturer, some or all of the costs of this proposed AD may be covered under warranty by UTC Aerospace Systems, thereby reducing the cost impact on affected individuals. The FAA does not control warranty coverage for affected individuals. As a result, the FAA has included all known costs in the cost estimate.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, ''General requirements.'' Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This proposed AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

Regulatory Findings

The FAA has determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the proposed regulation:

(1) Is not a ''significant regulatory action'' under Executive Order 12866,

(2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

The Boeing Company: Docket No. FAA–2019–1070; Product Identifier 2019–NM–178–AD.

(a) Comments Due Date

The FAA must receive comments on this AD action by February 24, 2020.

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 787–8 and 787–9 airplanes, certificated in any category, as identified in Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019.

(d) Subject

Air Transport Association (ATA) of America Code 21, Air conditioning.

(e) Unsafe Condition

This AD was prompted by reports that the cabin air compressor (CAC) outlet check valve failed due to fatigue of the aluminum flappers, and exposed the Y-duct to temperatures above its design limit. The FAA is issuing this AD to address this condition, which could expose the flight deck and passenger cabin to smoke and fumes, and lead to reduced crew performance or produce passenger discomfort. Off gassed compounds could cause respiratory distress and could cause serious injury for an individual with a compromised respiratory system.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

Except as specified in paragraph (h) of this AD: At the applicable times specified in paragraph 5., ''Compliance,'' of Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019, do all applicable actions identified as ''RC'' (required for compliance) in, and in accordance with, the Accomplishment Instructions of Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019.

(h) Exceptions to Service Information Specifications

Where Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019, uses the phrase ''the Issue 002 date of this service bulletin,'' this AD requires using ''the effective date of this AD.''

(i) Parts Installation Prohibition

As of the effective date of this AD, no person may install a CAC outlet check valve, with a part number listed in paragraph 1.B, ''Spares Affected'' of Boeing Service Bulletin B787–81205–SB210108–00, Issue 002, dated October 15, 2019, on any airplane.

(j) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraph (g) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin B787–81205–SB210108–00, Issue 001, dated May 25, 2018.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (l)(1) of this AD. Information may be emailed to: *9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.*

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (k)(4)(i) and (ii) of this AD apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. If a step or substep is labeled ''RC Exempt,'' then the RC requirement is removed from that step or substep. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

(l) Related Information

(1) For more information about this AD, contact Allie Buss, Aerospace Engineer, Cabin Safety and Environmental Systems Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3564; email: *Allison.Buss@faa.gov.*

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110 SK57, Seal Beach, CA 90740 5600; telephone 562–797–1717; internet *https://www.myboeingfleet.com.* You may view this referenced service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

Issued on December 31, 2019.

John P. Piccola,

Acting Director, System Oversight Division, Aircraft Certification Service.

[FR Doc. 2020–00059 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–13–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 282

[EPA–R10–UST–2019–0363; FRL–10003–27–Region 10]

Idaho: Final Approval of State Underground Storage Tank Program Revisions, Codification, and Incorporation by Reference

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: Pursuant to the Resource Conservation and Recovery Act (RCRA or Act), the Environmental Protection Agency (EPA) is proposing to approve revisions to the State of Idaho's Underground Storage Tank (UST) program submitted by the State. This action is based on EPA's determination that the State's revisions satisfy all requirements for UST program approval. This action also proposes to codify Idaho's State program as revised by Idaho and approved by the EPA and to incorporate by reference the State regulations that we have determined meet the requirements for approval. The State's federally-authorized and codified UST program, as revised pursuant to this action, will remain subject to the EPA's inspection and enforcement authorities under sections 9005 and 9006 of RCRA Subtitle I and other applicable statutory and regulatory provisions.

DATES: Send written comments by February 10, 2020.

ADDRESSES: Submit your comments by one of the following methods:

1. *Federal eRulemaking Portal: https://www.regulations.gov.* Follow the online instructions for submitting comments.

2. *Email: wilder.scott@epa.gov.*

3. *Mail:* Scott Wilder, Enforcement and Compliance Assurance Division (ECAD 20–C04) EPA Region 10, 1200 Sixth Avenue, Suite 155, Seattle, Washington 98101.

4. *Hand Delivery or Courier:* Deliver your comments to Scott Wilder, Enforcement and Compliance Assurance Division (ECAD 20–C04), EPA Region 10, 1200 Sixth Avenue, Suite 155, Seattle, Washington 98101.

Instructions: Direct your comments to Docket ID No. EPA–R10–UST–2019–0363. The EPA's policy is that all comments received will be included in the public docket without change and may be available online at *https://www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *https://www.regulations.gov,* or email. The federal *https://www.regulations.gov* website is an ''anonymous access'' system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *https://www.regulations.gov,* then your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the internet. If you submit an electronic comment, then the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, then the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

You can view and copy the documents that form the basis for this action and associated publicly available materials from 8:30 a.m. to 4:00 p.m. Monday through Friday at the following location: EPA Region 10, 1200 Sixth Avenue, Seattle, Washington 98101, phone number (206) 553–6693. Interested persons wanting to examine these documents should make an appointment with the office at least 2 days in advance.

FOR FURTHER INFORMATION CONTACT: Scott Wilder, (206) 553–6693, Region 10, Enforcement and Compliance Assurance Agreement, EPA Region 10, 1200 Sixth Avenue, Seattle, Washington, 98101, email address: *wilder.scott@epa.gov.*

SUPPLEMENTARY INFORMATION: For additional information, see the direct final rule published in the ''Rules and Regulations'' section of this **Federal Register**.

*Authority:*This rule is issued under the authority of Sections 2002(a), 9004, and 7004(b) of the Solid Waste Disposal Act, as amended, 42 U.S.C. 6912, 6991c, 6991d, and 6991e.

Dated: November 27, 2019.

Chris Hladick,

Regional Administrator, EPA Region 10.

[FR Doc. 2019–28391 Filed 1–9–20; 8:45 am]

BILLING CODE 6560–50–P

Notices

Federal Register
Vol. 85, No. 7
Friday, January 10, 2020

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

COMMISSION ON CIVIL RIGHTS

Notice of Public Meeting of the Utah Advisory Committee

AGENCY: U.S. Commission on Civil Rights.

ACTION: Announcement of meeting.

SUMMARY: Notice is hereby given, pursuant to the provisions of the rules and regulations of the U.S. Commission on Civil Rights (Commission) and the Federal Advisory Committee Act (FACA) that the meeting of the Utah Advisory Committee (Committee) to the Commission will be held at 12:00 p.m. (Mountain Time) Friday, January 31, 2020. The purpose of this meeting is for the Committee to discuss report outline and report writing assignments on the Gender Wage Gap.

DATES: The meeting will be held on Friday, January 31, 2020 at 12:00 p.m. MT.

Public Call Information: Dial: 800–367–2401, Conference ID: 6600696.

FOR FURTHER INFORMATION CONTACT: Ana Victoria Fortes (DFO) at *afortes@usccr.gov* or (213) 894–3437.

SUPPLEMENTARY INFORMATION: This meeting is available to the public through the following toll-free call-in number: 800–367–2403, conference ID number: 6600696. Any interested member of the public may call this number and listen to the meeting. Callers can expect to incur charges for calls they initiate over wireless lines, and the Commission will not refund any incurred charges. Callers will incur no charge for calls they initiate over land-line connections to the toll-free telephone number. Persons with hearing impairments may also follow the proceedings by first calling the Federal Relay Service at 1–800–877–8339 and providing the Service with the conference call number and conference ID number.

Members of the public are entitled to make comments during the open period at the end of the meeting. Members of the public may also submit written comments; the comments must be received in the Regional Programs Unit within 30 days following the meeting. Written comments may be mailed to the Western Regional Office, U.S. Commission on Civil Rights, 300 North Los Angeles Street, Suite 2010, Los Angeles, CA 90012. They may be faxed to the Commission at (213) 894–0508, or emailed Ana Victoria Fortes at *afortes@usccr.gov*. Persons who desire additional information may contact the Regional Programs Unit at (213) 894–3437.

Records and documents discussed during the meeting will be available for public viewing prior to and after the meetings at *https://www.facadatabase.gov/FACA/FACAPublicViewCommitteeDetails?id=a10t0000001gzltAAA.*

Please click on the ''Committee Meetings'' tab. Records generated from these meetings may also be inspected and reproduced at the Regional Programs Unit, as they become available, both before and after the meetings. Persons interested in the work of this Committee are directed to the Commission's website, *https://www.usccr.gov,* or may contact the Regional Programs Unit at the above email or street address.

Agenda

I. Welcome
II. Discuss Report Outline
III. Discuss Report Writing Assignments
IV. Public Comment
V. Good of the Order
VI. Adjournment

Dated: January 6, 2020.

David Mussatt,

Supervisory Chief, Regional Programs Unit.

[FR Doc. 2020–00199 Filed 1–9–20; 8:45 am]

BILLING CODE P

DEPARTMENT OF COMMERCE

International Trade Administration

[A–533–885, A–570–097]

Polyester Textured Yarn From India and the People's Republic of China: Amended Final Antidumping Duty Determination for India and Antidumping Duty Orders

AGENCY: Enforcement and Compliance, International Trade Administration, Department of Commerce.

SUMMARY: Based on affirmative final determinations by the Department of Commerce (Commerce) and the International Trade Commission (ITC), Commerce is issuing antidumping duty orders on polyester textured yarn from India and the People's Republic of China (China). In addition, Commerce is amending its final affirmative determination with respect to India.

DATES: Applicable January 10, 2020.

FOR FURTHER INFORMATION CONTACT: Kate Johnson (India) or Irene Gorelik (China), AD/CVD Operations, Office VIII, Enforcement and Compliance, International Trade Administration, U.S. Department of Commerce, 1401 Constitution Avenue NW, Washington, DC 20230; telephone (202) 482–4929 or (202) 482–6905, respectively.

SUPPLEMENTARY INFORMATION:

Background

On November 19, 2019, Commerce published its affirmative final determinations in the less-than-fair-value (LTFV) investigations of polyester textured yarn from India and China.[1] Also on November 19, 2019, Commerce received ministerial error allegations.[2] *See* the ''India Amended Final Determination'' section for further discussion. On January 3, 2020, the International Trade Commission (ITC) notified Commerce of its final determinations, pursuant to section 735(d), that an industry in the United States is materially injured within the meaning of section 735(b)(1)(A)(i) of the Tariff Act of 1930, as amended (the Act) by reason of LTFV imports of polyester textured yarn from India and China, and of its determination that critical circumstances do not exist with respect

[1] *See Polyester Textured Yarn from India: Final Determination of Sales at Less Than Fair Value,* 84 FR 63843 (November 19, 2019) (*India Final*); and *Polyester Textured Yarn from the People's Republic of China: Final Determination of Sales at Less Than Fair Value, and Final Affirmative Determination of Critical Circumstances,* 84 FR 63850 (November 19, 2019).

[2] *See* Petitioner's Letter, ''Polyester Textured Yarn from India—Petitioners' Ministerial Error Comments Regarding the Final Determination,'' dated November 19, 2019; *see also* JBF's Letter ''Antidumping Investigation of Polyester Textured Yarn from India (Case No. A–533–885)—JBF Industries Limited's Ministerial Error Comments for the Final Determination,'' dated November 19, 2019.

to imports of polyester textured yarn from China.[3]

Scope of the Orders

The product covered by these orders is polyester textured yarn from India and China. For a complete description of the scope of these orders, *see* the Appendix to this notice.

Amendment to Final Determination

A ministerial error is defined as an error in addition, subtraction, or other arithmetic function, clerical error resulting from inaccurate copying, duplication, or the like, and any other similar type of unintentional error which the Secretary considers ministerial.[4]

India Amended Final Determination

Pursuant to section 735(e) of the Act and 19 CFR 351.224(e) and (f), Commerce is amending the final determinations in the LTFV investigation of polyester textured yarn from India (*India Final*) to reflect the correction of a ministerial error in the final estimated weighted-average dumping margin calculated for Reliance Industries Limited (Reliance). In addition, because Reliance's estimated weighted-average dumping margin is the basis for the estimated weighted-average dumping margin for JBF Industries Limited (JBF), as well as the estimated weighted-average dumping margin determined for all other Indian producers and exporters of subject merchandise, we also are revising JBF's estimated weighted-average dumping margin and the all-others rate in the *India Final*.[5]

Antidumping Duty Orders

On January 3, 2020, in accordance with section 735(d) of the Act, the ITC notified Commerce of its final determinations in these investigations, in which it found that an industry in the United States is materially injured by reason of imports of polyester textured yarn from India and China.[6] Therefore, in accordance with section 735(c)(2) of the Act, Commerce is issuing these antidumping duty orders. Because the ITC determined that imports of polyester textured yarn from India and China are materially injuring a U.S. industry, unliquidated entries of such merchandise from India and China, entered or withdrawn from warehouse for consumption, are subject to the assessment of antidumping duties.

Therefore, in accordance with section 736(a)(1) of the Act, Commerce will direct U.S. Customs and Border Protection (CBP) to assess, upon further instruction by Commerce, antidumping duties equal to the amount by which the normal value of the merchandise exceeds the export price (or constructed export price) of the merchandise, for all relevant entries of polyester textured yarn from India and China. With the exception of entries occurring after the expiration of the provisional measures period and before publication of the ITC's final affirmative injury determinations, as further described below, antidumping duties will be assessed on unliquidated entries of polyester textured yarn from India and China entered, or withdrawn from warehouse, for consumption, on or after July 1, 2019, the date of publication of the preliminary determinations.[7]

Continuation of Suspension of Liquidation

Except as noted in the ''Provisional Measures'' section of this notice, in accordance with section 735(c)(1)(B) of the Act, Commerce will instruct CBP to continue to suspend liquidation on all relevant entries of polyester textured yarn from India and China. These instructions suspending liquidation will remain in effect until further notice.

Commerce will also instruct CBP to require cash deposits equal to the estimated weighted-average dumping margins indicated in the tables below, adjusted by the export subsidy offset. Given that the provisional measures period has expired, as explained below, effective on the date of publication in the **Federal Register** of the notice of the ITC's final affirmative injury determinations, CBP will require, at the same time as importers would normally deposit estimated duties on subject merchandise, a cash deposit equal to the rates noted below.[8] The relevant all-others rate applies to all producers or exporters not specifically listed. The China-wide entity rate applies to all exporter-producer combinations not specifically listed.

Provisional Measures

Section 733(d) of the Act states that suspension of liquidation pursuant to an affirmative preliminary determination may not remain in effect for more than four months, except where exporters representing a significant proportion of exports of the subject merchandise request that Commerce extend the four-month period to no more than six months. At the request of exporters that account for a significant proportion of polyester textured yarn from India and China, Commerce extended the four-month period to six months in each of these investigations. Commerce published the preliminary determinations in these investigations on July 1, 2019.[9]

The extended provisional measures period, beginning on the date of publication of the preliminary determinations, ended on December 27, 2019. Therefore, in accordance with section 733(d) of the Act and our practice,[10] Commerce will instruct CBP to terminate the suspension of liquidation and to liquidate, without regard to antidumping duties, unliquidated entries of polyester textured yarn from India and China entered, or withdrawn from warehouse, for consumption after December 27, 2019, the final day on which the provisional measures were in effect, until and through the day preceding the date of publication of the ITC's final affirmative injury determinations in the **Federal Register.** Suspension of liquidation and the collection of cash deposits will resume on the date of publication of the ITC's final determinations in the **Federal Register.**

Critical Circumstances

With regard to the ITC's negative critical circumstances determination on imports of polyester textured yarn from China discussed above, we will instruct CBP to lift suspension and to refund any cash deposits made to secure the payment of estimated antidumping duties with respect to entries of polyester textured yarn from China, entered or withdrawn from warehouse, for consumption on or after April 2, 2019 (*i.e.,* 90 days prior to the date of

[3] *See* ITC Notification Letter, Investigation Nos. 701–TA–612–613 and 731–TA–1429–1430 (Final), dated January 3, 2020 (ITC Notification).

[4] *See* section 735(e) of the Act; *see also* 19 CFR 351.224(f).

[5] *See infra,* section on ''Estimated Weighted-Average Dumping Margins''; *see also* Memorandum, ''Less-Than-Fair-Value Investigation of Polyester Textured Yarn from India: Ministerial Error Allegations Regarding the Final Determination,'' dated December 9, 2019.

[6] *See* ITC Notification Letter; *see also Polyester Textured Yarn from China and India* (Inv. Nos. 701–TA–612–613 and 731–TA–1429–1430 (Final), USITC Publication 5007, January 2020).

[7] *See China Preliminary Determination* and *Polyester Textured Yarn from India: Preliminary Affirmative Determination of Sales at Less Than Fair Value and Postponement of Final Determination and Extension of Provisional Measures,* 84 FR 31301 (July 1, 2019) (*India Preliminary Determination*).

[8] *See* section 736(a)(3) of the Act.

[9] *See China Preliminary Determination* and *India Preliminary Determination.*

[10] *See, e.g., Certain Corrosion-Resistant Steel Products from India, India, the People's Republic of China, the Republic of Korea and Taiwan: Amended Final Affirmative Antidumping Determination for India and Taiwan, and Antidumping Duty Orders,* 81 FR 48390, 48392 (July 25, 2016).

publication of the preliminary determination), but before July 1, 2019 (*i.e.,* the date of publication of the preliminary determination for this investigation).

Estimated Weighted-Average Dumping Margins

The estimated weighted-average antidumping duty margin percentages are as follows:

INDIA

Exporter or producer	Estimated weighted-average dumping margin (percent)	Cash deposit rate (adjusted for export subsidy offset(s)) (percent)
JBF Industries Limited	47.98	43.85
Reliance Industries Limited	17.98	13.85
All Others	17.98	13.50

CHINA

Producer	Exporter	Estimated dumping margin (percent)	Cash deposit rate (adjusted for export subsidy offset) (percent)
Jiangsu Hengli Chemical Fiber Co., Ltd	Jiangsu Hengli Chemical Fiber Co., Ltd	76.07	65.39
	China-Wide Entity [11]	77.15	66.47

This notice constitutes the antidumping duty orders with respect to polyester textured yarn from India and China pursuant to section 736(a) of the Act. Interested parties can find a list of antidumping duty orders currently in effect at *http://enforcement.trade.gov/stats/iastats1.html.*

This amended final determination and antidumping duty orders are published in accordance with sections 735(e) and 736(a) of the Act and 19 CFR 351.224(e) and 19 CFR 351.211(b).

Dated: January 6, 2020.

Jeffrey I. Kessler,

Assistant Secretary for Enforcement and Compliance.

Appendix

Scope of the Orders

The merchandise covered by these orders, polyester textured yarn, is synthetic multifilament yarn that is manufactured from polyester (polyethylene terephthalate). Polyester textured yarn is produced through a texturing process, which imparts special properties to the filaments of the yarn, including stretch, bulk, strength, moisture absorption, insulation, and the appearance of a natural fiber. This scope includes all forms of polyester textured yarn, regardless of surface texture or appearance, yarn density and thickness (as measured in denier), number of filaments, number of plies, finish (luster), cross section, color, dye method, texturing method, or packing method (such as spindles, tubes, or beams).

Excluded from the scope of these orders is bulk continuous filament yarn that: (a) is polyester synthetic multifilament yarn; (b) has denier size ranges of 900 and above; (c) has turns per meter of 40 and above; and (d) has a maximum shrinkage of 2.5 percent.

The merchandise subject to these orders is properly classified under subheadings 5402.33.3000 and 5402.33.6000 of the Harmonized Tariff Schedule of the United States (HTSUS). Merchandise subject to these orders may also enter under HTSUS subheading 5402.52.00.[12] Although the HTSUS subheadings are provided for convenience and customs purposes, the written description of the merchandise is dispositive.

[FR Doc. 2020–00247 Filed 1–9–20; 8:45 am]

BILLING CODE 3510–DS–P

[11] The China-wide entity includes: (1) The single entity comprising Fujian Billion Polymerization Fiber Technology Industrial Co., Ltd. and its affiliate Fujian Baikai Textile Chemical Fiber Co., Ltd.; (2) Suzhou Shenghong Fiber Co., Ltd. (3) Fujian Zhengqi Hi-tech Fiber Technology Co., Ltd.; (4) Chori (China) Co., Ltd.; (5) Jinjiang Jinfu Chemical Fiber and Polymer Co., Ltd.; (6) Jiangsu Guowang High-Technique Fiber Co., Ltd.; and (7) Pujiang Fairy Home Textile Co., Ltd. The China-wide entity also includes 33 companies named in the Petition that did not respond to our request for quantity and value information, and two companies that submitted quantity and value data but did not submit separate rate applications.

[12] HTSUS subheading 5402.52 includes subheadings 5402.52.10.00 and 5402.52.90.00.

DEPARTMENT OF COMMERCE

International Trade Administration

[C–533–892]

Forged Steel Fittings From India: Postponement of Preliminary Determination in the Countervailing Duty Investigation

AGENCY: Enforcement and Compliance, International Trade Administration, Department of Commerce

DATES: Applicable January 10, 2020.

FOR FURTHER INFORMATION CONTACT: Lauren Caserta, AD/CVD Operations, Office VII, Enforcement and Compliance, International Trade Administration, U.S. Department of Commerce, 1401 Constitution Avenue NW, Washington, DC 20230; telephone: (202) 482–4737.

SUPPLEMENTARY INFORMATION:

Background

On November 12, 2019, the Department of Commerce (Commerce) initiated the countervailing duty (CVD) investigation of forged steel fittings from India.[1] Currently, the preliminary determination is due no later than January 16, 2020.

[1] *See Forged Steel Fittings from India: Initiation of Countervailing Duty Investigation,* 84 FR 64270 (November 21, 2019).

Postponement of the Preliminary Determination

Section 703(b)(1) of the Tariff Act of 1930, as amended (the Act), requires Commerce to issue the preliminary determination in a CVD investigation within 65 days after the date on which Commerce initiated the investigation. However, section 703(c)(1)(A) of the Act permits Commerce to postpone the preliminary determination until no later than 130 days after the date on which Commerce initiated the investigation if a petitioner makes a timely request for a postponement. Under 19 CFR 351.205(e), a petitioner must submit a request for postponement 25 days or more before the scheduled date of the preliminary determination and must state the reason for the request. Commerce will grant the request unless it finds compelling reasons to deny the request.[2]

On November 27, 2019, Bonney Forge Corporation and the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (collectively, petitioners) submitted a timely request pursuant to section 703(c)(1)(A) of the Act and 19 CFR 351.205(e) to postpone fully the preliminary determination. The petitioners stated that the purpose of their request was to provide Commerce with sufficient time to select appropriate respondents and conduct a full investigation in light of the complex nature of the basket categories in which subject imports are classified.[3]

In accordance with 19 CFR 351.205(e), the reason for requesting a postponement of the preliminary determination and the record does not present any compelling reasons to deny the request. Therefore, in accordance with section 703(c)(1)(A) of the Act, Commerce is postponing the deadline for the preliminary determination to March 23, 2020.[4] Pursuant to section 705(a)(l) of the Act and 19 CFR 351.210(b)(1), the deadline for the final determination will continue to be 75 days after the date of the preliminary determination, unless postponed at a later date.

This notice is issued and published pursuant to section 703(c)(2) of the Act and 19 CFR 351.205(f)(l).

Dated: January 6, 2020.

Jeffrey I. Kessler,

Assistant Secretary for Enforcement and Compliance.

[FR Doc. 2020–00251 Filed 1–9–20; 8:45 am]

BILLING CODE 3510–DS–P

[2] *See* 19 CFR 351.205(e).

[3] *See* Petitioner's Letter, ''Forged Steel Fittings from India: Request to Postpone Preliminary Determination,'' dated November 27, 2019.

[4] In this case, 130 days after initiation falls on Saturday, March 21, 2020. Commerce's practice dictates that where a deadline falls on a weekend or federal holiday, the appropriate deadline is the next business day. *See Notice of Clarification: Application of ''Next Business Day'' Rule for Administrative Determination Deadlines Pursuant to the Tariff Act of 1930, As Amended,* 70 FR 24533 (May 10, 2005).

DEPARTMENT OF COMMERCE

International Trade Administration

[C–570–098, C–533–886]

Polyester Textured Yarn From the People's Republic of China and India: Countervailing Duty Orders

AGENCY: Enforcement and Compliance, International Trade Administration, Department of Commerce.

SUMMARY: Based on affirmative final determinations by the Department of Commerce (Commerce) and the International Trade Commission (ITC), Commerce is issuing countervailing duty orders on polyester textured yarn from the People's Republic of China (China) and India.

DATES: Applicable January 10, 2020.

FOR FURTHER INFORMATION CONTACT: Janae Martin (India) or Joseph Dowling (China), AD/CVD Operations, Office VIII, Enforcement and Compliance, International Trade Administration, U.S. Department of Commerce, 1401 Constitution Avenue NW, Washington, DC 20230; telephone (202) 482–0238 or (202) 482–1646, respectively.

SUPPLEMENTARY INFORMATION:

Background

On November 19, 2019, Commerce published its final determinations in the countervailing duty investigations of polyester textured yarn from China and India.[1]

On January 3, 2020, the ITC notified Commerce of its final affirmative determinations pursuant to sections 705(b)(1)(A)(i) and 705(d) of the Act that an industry in the United States is materially injured by reason of subsidized imports of polyester textured yarn from China and India, and of its determination that critical circumstances do not exist with respect to imports of polyester textured yarn from China.[2]

Scope of the Orders

The product covered by these orders is polyester textured yarn from China and India. For a complete description of the scope of these orders, *see* the Appendix to this notice.

Countervailing Duty Orders

On January 3, 2020, in accordance with sections 705(b)(1)(A)(i) and 705(d) of the Act, the ITC notified Commerce of its final determinations in these investigations, in which it found that an industry in the United States is materially injured by reason of subsidized imports of polyester textured yarn from China and India. In accordance with section 705(c)(2) Act, we are publishing these countervailing duty orders.

Therefore, in accordance with section 706(a) of the Act, Commerce will direct U.S. Customs and Border Protection (CBP) to assess, upon further instruction by Commerce, countervailing duties on unliquidated entries of polyester textured yarn from China and India entered, or withdrawn from warehouse, for consumption on or after May 3, 2019, the date on which Commerce published its preliminary countervailing duty determinations in the **Federal Register**,[3] and before August 31, 2019, the effective date on which Commerce instructed CBP to discontinue the suspension of liquidation in accordance with section 703(d) of the Act. Section 703(d) of the Act states that the suspension of liquidation pursuant to an affirmative preliminary determination may not remain in effect for more than four months. Therefore, entries of polyester textured yarn from China and India made on or after August 31, 2019, and prior to the date of publication of the ITC's final determination in the **Federal Register**, are not subject to the assessment of countervailing duties due to Commerce's discontinuation of the suspension of liquidation.

[1] *See Polyester Textured Yarn from the People's Republic of China: Final Affirmative Countervailing Duty Determination and Final Affirmative Determination of Critical Circumstances,* 84 FR 63845 (November 19, 2019), and accompanying Issues and Decision Memorandum (IDM); *see also Polyester Textured Yarn from India: Final Affirmative Countervailing Duty Determination,* 84 FR 63848 (November 19, 2019) and accompanying IDM (collectively, *Final Determinations*).

[2] *See* ITC Notification Letter, Investigation Nos. 701–TA–612–613 and 731–TA–1429–1430 (January 3, 2020) (ITC Notification).

[3] *See Polyester Textured Yarn from the People's Republic of China: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination with Final Antidumping Duty Determination,* 84 FR 19040 (May 3, 2019), and accompanying Preliminary Decision Memorandum (PDM); *see also Polyester Textured Yarn from India: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination with Final Antidumping Duty Determination,* 84 FR 19036, and accompanying PDM (May 3, 2019) (collectively, *Preliminary Determinations*).

Critical Circumstances

With regards to the ITC's negative critical circumstances determination on imports of polyester textured yarn from China discussed above, we will instruct CBP to lift suspension and to refund any cash deposits made to secure the payment of estimated countervailing duties with respect to entries of polyester textured yarn from China, entered or withdrawn from warehouse, for consumption on or after February 2, 2019 (*i.e.,* 90 days prior to the date of publication of the preliminary determination), but before May 3, 2019 (*i.e.,* the date of the publication of the preliminary determination for this investigation).

Suspension of Liquidation

In accordance with section 706 of the Act, Commerce will direct CBP to reinstitute the suspension of liquidation of polyester textured yarn from China and India, effective the date of publication of the ITC's notice of final determinations in the **Federal Register**, and to assess, upon further instruction by Commerce pursuant to section 706(a)(1) of the Act, countervailing duties for each entry of the subject merchandise in an amount based on the net countervailable subsidy rates for the subject merchandise. On or after the date of publication of the ITC's final injury determinations in the **Federal Register**, CBP must require, at the same time as importers would normally deposit estimated duties on this merchandise, a cash deposit equal to the rates noted below:

Country	Company	Subsidy rate (percent)
China	Fujian Billion Polymerization Fiber Technology Industrial Co., Ltd [4]	32.18
	Suzhou Shenghong Fiber Co., Ltd [5]	473.09
	Suzhou Shenghong Garmant Development Co	472.51
	All Others	32.18
India	JBF Industries Limited	21.83
	Reliance Industries Limited	4.29
	All Others	4.65

Provisional Measures

Section 703(d) of the Act states that the suspension of liquidation pursuant to an affirmative preliminary determination may not remain in effect for more than four months. Therefore, entries of polyester textured yarn from China and India made on or after August 31, 2019, and prior to the date of publication of the ITC's final determination in the **Federal Register**, are not subject to the assessment of countervailing duties due to Commerce's discontinuation of the suspension of liquidation.

In accordance with section 733(d) of the Act, Commerce instructed CBP to terminate the suspension of liquidation and to liquidate, without regard to CVD duties, unliquidated entries of polyester textured yarn from China and India entered, or withdrawn from warehouse, for consumption on or after August 31, 2019, the date on which the provisional CVD measures expired, through the day preceding the date of publication of the ITC final injury determinations in the **Federal Register**. Suspension of liquidation will resume on the date of publication of the ITC final injury determination in the **Federal Register**.

Notifications to Interested Parties

This notice constitutes the countervailing duty orders with respect to polyester textured yarn from China and India pursuant to section 706(a) of the Act. Interested parties can find a list of countervailing duty orders currently in effect at *http://enforcement.trade.gov/stats/iastats1.html.*

These orders are issued and published in accordance with section 706(a) of the Act and 19 CFR 351.211(b).

Dated: January 6, 2020.

Jeffrey I. Kessler,

Assistance Secretary for Enforcement and Compliance.

Appendix

Scope of the Orders

The merchandise covered by these orders, polyester textured yarn, is synthetic multifilament yarn that is manufactured from polyester (polyethylene terephthalate). Polyester textured yarn is produced through a texturing process, which imparts special properties to the filaments of the yarn, including stretch, bulk, strength, moisture absorption, insulation, and the appearance of a natural fiber. This scope includes all forms of polyester textured yarn, regardless of surface texture or appearance, yarn density and thickness (as measured in denier), number of filaments, number of plies, finish (luster), cross section, color, dye method, texturing method, or packing method (such as spindles, tubes, or beams).

Excluded from the scope of these orders is bulk continuous filament yarn that: (a) Is polyester synthetic multifilament yarn; (b) has denier size ranges of 900 and above; (c) has turns per meter of 40 and above; and (d) has a maximum shrinkage of 2.5 percent.

The merchandise subject to these orders is properly classified under subheadings 5402.33.3000 and 5402.33.6000 of the Harmonized Tariff Schedule of the United States (HTSUS). Merchandise subject to these orders may also enter under HTSUS subheading 5402.52.00.[6] Although the HTSUS subheadings are provided for convenience and customs purposes, the written description of the merchandise is dispositive.

[FR Doc. 2020–00245 Filed 1–9–20; 8:45 am]

BILLING CODE 3510–DS–P

[4] As discussed in the PDM, Commerce has found the following companies to be cross-owned with Fujian Billion: (1) Billion Development (Hong Kong) Limited, and (2) Billion Industrial Investment Limited.

[5] As discussed in the PDM, Commerce has found the following companies to be cross-owned with Suzhou Shenghong Fiber Co., Ltd.: (1) Jiangsu Zhonglu Technology Development Co., Ltd., (2) Jiangsu Guowang High-Technique Fiber Co., Ltd., (3) Jiangsu Shenghong Science and Technology Co., Ltd., (4) Jiangsu Honggang Petrochemical Co., Ltd., (5) Shenghong Group Co., Ltd., (6) Shenghong Holding Group, Co., Ltd., (7) Shenghong (Suzhou) Group Co., Ltd., (8) Jiangsu Shenghong Investment Development Co., Ltd., (9) Jiangsu Shenghong New Material Co., Ltd., and (10) Jiangsu Shenghong Textile Imp & Exp Co. and its successor Jiangsu Huahui Import and Export Co., Ltd.

[6] HTSUS subheading 5402.52 includes subheadings 5402.52.10.00 and 5402.52.90.00.

DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

National Conference on Weights and Measures Interim Meeting

AGENCY: National Institute of Standards and Technology, Commerce.

ACTION: Notice.

SUMMARY: The Interim Meeting of the National Conference on Weights and Measures (NCWM) will be held in Riverside, CA, from Sunday, January 26, 2020, through Wednesday, January 29, 2020. This notice contains information about significant items on the NCWM Committee agendas but does not include all agenda items. As a result, the items are not consecutively numbered.

DATES: The meeting will be held from Sunday, January 26, 2020, through Wednesday, January 29, 2020. The meeting schedule will be available on the NCWM website at *www.ncwm.com*.

ADDRESSES: This meeting will be held at The Mission Inn & Spa, 3649 Mission Inn Avenue Riverside, CA 92501.

FOR FURTHER INFORMATION CONTACT: Dr. Douglas Olson, NIST, Office of Weights and Measures, 100 Bureau Drive, Stop 2600, Gaithersburg, MD 20899–2600. You may also contact Dr. Olson at (301) 975–2956 or by email at *douglas.olson@nist.gov*. The meeting is open to the public, but a paid registration is required. Please see the NCWM website (*www.ncwm.com*) to view the meeting agendas, registration forms, and hotel reservation information.

SUPPLEMENTARY INFORMATION: Publication of this notice on the NCWM's behalf is undertaken as a public service and does not itself constitute an endorsement by the National Institute of Standards and Technology (NIST) of the content of the notice. NIST participates in the NCWM as an NCWM member and pursuant to 15 U.S.C. 272(b)(10) and (c)(4) and in accordance with Federal policy (*e.g.,* OMB Circular A–119 ''Federal Participation in the Development and Use of Voluntary Consensus Standards'').

The NCWM is an organization of weights and measures officials of the states, counties, and cities of the United States, and representatives from the private sector and federal agencies. These meetings bring together government officials and representatives of business, industry, trade associations, and consumer organizations on subjects related to the field of weights and measures technology, administration, and enforcement. NIST participates to encourage cooperation between federal agencies and the states in the development of legal metrology requirements. NIST also promotes uniformity in state laws, regulations, and testing procedures used in the regulatory control of commercial weighing and measuring devices, packaged goods, and for other trade and commerce issues.

The NCWM has established multiple committees, task groups, and other working bodies to address legal metrology issues of interest to regulatory officials, industry, consumers, and others. The following are brief descriptions of some of the significant agenda items that will be considered by some of the NCWM Committees at the NCWM Interim Meeting. Comments will be taken on these and other issues during several public comment sessions. At this stage, the items are proposals. This meeting also includes work sessions in which the Committees may also accept comments, and where recommendations will be developed for consideration and possible adoption at the NCWM 2020 Annual Meeting. The Committees may withdraw or carryover items that need additional development.

These notices are intended to make interested parties aware of these development projects and to make them aware that reports on the status of the project will be given at the Interim Meeting. The notices are also presented to invite the participation of manufacturers, experts, consumers, users, and others who may be interested in these efforts.

The Specifications and Tolerances Committee (S&T Committee) will consider proposed amendments to NIST Handbook 44, ''Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices'' (NIST HB 44). Those items address weighing and measuring devices used in commercial applications, that is, devices that are used to buy from or sell to the public or used for determining the quantity of products or services sold among businesses. Issues on the agenda of the NCWM Laws and Regulations Committee (L&R Committee) relate to proposals to amend NIST Handbook 130, ''Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality'' and NIST Handbook 133, ''Checking the Net Contents of Packaged Goods.''

NCWM S&T Committee

The following items are proposals to amend NIST Handbook 44:

SCL—Scales Code

Item SCL–17.1 S.1.8.5. Recorded Representations, Point of Sale Systems, Appendix D—Definitions: Tare

This item is a carry-over item from the 2019 NCWM Annual Meeting that has been on the S&T Committee's Agenda since 2017. The S&T Committee will consider a proposal requiring additional sales information to be recorded by cash registers interfaced with a weighing element for items that are weighed at a checkout stand. This item was assigned for further development by a Task Group in July 2018. The Task Group has provided two different versions of the proposal to the S&T Committee. One version is retroactive and the other is a nonretroactive version. The version that will be adopted is expected to be part of the NCWMs 2020 voting process. The retroactive version would be enforceable on all systems, and the nonretroactive version will be enforceable on only those systems manufactured and placed in service on or after the effective date specified. These systems are currently required to record the net weight, unit price, total price, and the product class, or in a system equipped with price look-up capability, the product name or code number. The change proposed would add ''tare weight'' to the list of sales information currently required.

Item SCL–16.1 Sections Throughout the Code To Include Provisions for Commercial Weigh-in-Motion Vehicle Scale Systems

This item is another carry-over item originally appearing on the S&T's agenda in 2016. The S&T Committee will consider a proposal drafted by the NCWM's Weigh-In-Motion (WIM) Task Group (TG) to amend various sections of NIST HB 44, Scales Code to address WIM vehicle scale systems used for commercial applications. The TG is made up of representatives of WIM equipment manufacturers, the U.S. Department of Transportation Federal Highway Administration, NIST Office of Weights and Measures, truck weight enforcement agencies, state weights and measures agencies, and others.

The WIM TG was first formed in February 2016 to consider a proposal to expand NIST HB 44, Weigh-In-Motion Systems Used for Vehicle Enforcement Screening—Tentative Code to also apply to legal-for-trade (commercial) and law enforcement applications.

The focus of the TG since July 2016 has been to concentrate on the development of test procedures that can be used to verify the accuracy of a WIM vehicle scale system given the different axle and tandem axle configurations of vehicles that will typically be weighed by a system and a proposed maintenance and acceptance tolerance of 0.2 percent on gross (total) vehicle weight. Members of the TG, to date, have been unsuccessful in agreeing on test procedures, and, as a result, the TG recently developed a ''White Paper'' during the summer of 2017, which it distributed to the different regional weights and measures associations requesting feedback from their fall 2017 conferences on some different draft test procedures being considered and some other concerns. The TG is awaiting evidence that will substantiate the submitter's claims that these types of WIM systems are capable of meeting NIST HB 44 Scales Code Class III L tolerances.

SCL–20.12 Multiple Sections To Add Vehicle Weigh-in-Motion to the Code and Appendix D—Definitions; Vehicle Scale and Weigh-in-Motion Vehicle Scale

This new item to be considered by the S&T Committee is similar to the previous SCL–16.1 item in that it proposes to add WIM systems for motor vehicles to the NIST HB 44 Scales Code. This new proposal differs from SCL–16.1 however, since it would not apply to axle-load type scales but instead, would apply to a full-length vehicle scale used for WIM.

SCL–20.10 S.1.2.2.2. Class I and II Scales Used in Direct Sale and S.1.2.2.3. Deviation of a ''d'' Resolution.

The S&T Committee will consider a new proposal to replace two current requirements (S.1.2.2.2. and S.1.2.2.3.) with a new, amended version of S.1.2.2.2. ''Class III and IIII Scales.'' This item is also related to two other items (individual item SCL–20.11 and SCL–20.2 that is included as part of Block 2 on the agenda) on the S&T Agenda in 2020 in that all three items address the value of ''e'' and ''d'' in precision scales. In 2017, the NCWM adopted a proposal adding a new paragraph (S.1.2.2.2.) requiring the value of the scale division (d) and verification scale interval (e) to be equal on Class I and Class II scales installed into commercial service as of January 1, 2020, when used in a direct sale application (*i.e.,* both parties of a weighing transaction are present when the quantity is determined). The S&T Committee will now consider a new proposal that, if adopted, would eliminate the requirement adopted in 2017. This item would instead state that on Class III and IIII scales, the value of ''e'' will be specified by the manufacturer, and that (except on dynamic monorail scales) ''e'' must be less than or equal to ''d''. The absence of any requirement included in this proposal regarding the value of ''e'' and ''d'' for Class I and Class II scales would imply that for those scales, the values of e and d may differ. The other two items mentioned, SCL–20.11 and SCL–20.2, propose different approaches on how the values of ''e'' and ''d'' should be addressed in scales used in direct sales applications.

LMD—Liquid Measuring Devices

LMD–20.1 Table S.2.2. Categories of Device and Methods of Sealing

The S&T Committee will consider a new proposal to permit the use of an electronic log in lieu of a printed copy of a Category 3 sealing method on liquid measuring devices. Current NIST HB 44 LMD requirements specify that a printed copy of an event logger must be available and only state that an electronic version of this log can be additionally provided. This new proposal would amend the language in Table S.2.2. ''Categories of Device and Methods of Sealing'' to permit either form (printed or electronic) of the event logger to be made available.

VTM—Vehicle Tank Meters

VTM–18.1 S.3.1.1. Means for Clearing the Discharge Hose and UR.2.6. Clearing the Discharge Hose

The S&T Committee will again consider this carry-over item that proposes to provide specifications and user requirements for manifold flush systems designed to eliminate product contamination on VTMs used for multiple products. This proposal would add specifications on the design of VTMs under S.3.1.1., ''Means for Clearing the Discharge Hose,'' and add a new user requirement UR.2.6., ''Clearing the Discharge Hose.'' During open hearings at previous NCWM meetings, comments were heard about the design of any system to clear the discharge hose of a product prior to the delivery of a subsequent product which could provide opportunities to fraudulently use this type of system.

EVF—Electric Vehicle Fueling Systems

EVF–20.1 S.1.3.2. EVSE Value of the Smallest Unit

The S&T Committee will consider a new proposal that would specify the maximum value of the indicated and/or recorded electrical energy unit used in an EVSE (Electric Vehicle Supply Equipment). This proposal would reduce (by a factor of 10) the current specified values of these units. The current maximum values of 0.005 MJ and 0.001 kWh would be changed to 0.0005 MJ and 0.0001 kWh respectively. The submitters contend that testing of these systems would be expedited through these changes and reduce the amount of time necessary to complete official tests.

GMA—Grain Moisture Meters 5.56 (A)

GMA–19.1 Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Method for All Grains and Oil Seeds

The S&T Committee will consider a proposal that would reduce the tolerances for the air oven reference method. The proposed new tolerances would apply to all types of grains and oil seeds. This item is a carry-over proposal from 2019 and would replace the contents of Table T.2.1. with new criteria. Additional inspection data will be collected and reviewed to assess whether the proposed change to the tolerances are appropriate.

Block 3 Items

The S&T Committee will consider changes included in this block affecting the NIST HB 44 Taximeters Code (Section 5.54.) and the Transportation Network Measurement Systems (TNMS) Code (Section 5.60.) that would amend the value of tolerances allowed for distance tests. The changes proposed in this item would change the Taximeters Code requirement T.1.1. ''On Distance Tests'' by increasing that tolerance to 2.5% when the test exceeds one mile. The change to the TNMS Code affects requirement T.1.1. ''Distance Tests'' by reducing the tolerance allowed on overregistration under T.1.1.(a) from the current 2.5% to 1% when the test does not exceed one mile and would increase the tolerance for underregistration in T.1.1.(b) from 2.5% to 4%. These changes if adopted would align the tolerances values for distance tests allowed for taximeters and TNMS.

NCWM L&R Committee

NIST Handbook 130 and NIST Handbook 133

The following items are proposals to amend NIST Handbooks 130 and 133:

Block 1 (B1) Items

NIST Handbook 133, ''Checking the Net Contents of Packaged Goods,'' and NIST Handbook 130, Uniform Packaging and Labeling Regulation (UPLR), Section 2.8. Multiunit Package.

The L&R Committee will consider a proposal to add a test procedure in NIST Handbook 133 for addressing the total quantity declaration on multiunit or variety packages. In addition, in NIST Handbook 130, it will clarify the definition of Section 2.8. Multiunit package.

NIST Handbook 130, Uniform Method of Sale of Commodities (MOS)

Item MOS–20.4. 2.XX. Ink and Toner Cartridges

The L&R Committee will consider a proposed method of sale for adoption to clarify the labeling requirements for packaged inkjet and toner cartridges to ensure that consumers are informed about the net quantity of contents of these products, value comparisons can be made, and quantities can be verified to ensure equity between buyer and seller and fair competition between sellers, including original equipment manufacturers. Page verification would

be in accordance to the ISO/IEC standard.

NIST Handbook 133, ''Checking the Net Contents of Packaged Goods''

Item NET–20.2. 4.5. Polyethylene Sheeting, Bags, and Liners

The L&R Committee will consider a proposal under Item NET 20.2. to consider changes to the equipment that is used to test the thickness of polyethylene sheeting, bags, and liners. This modification would allow for electronic instruments to be used for thickness measurements. In addition, changes to the test procedure would need to be modified for the use of electronic instruments.

Under Item ODR NEW, the L&R Committee will consider a recommended proposal to remove the Open Dating Regulation in its entirety from NIST Handbook 130.

Kevin A. Kimball,

Chief of Staff.

[FR Doc. 2020–00205 Filed 1–9–20; 8:45 am]

BILLING CODE 3510–13–P

DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

Visiting Committee on Advanced Technology; Meeting

AGENCY: National Institute of Standards and Technology, Department of Commerce.

ACTION: Notice of open meeting.

SUMMARY: National Institute of Standards and Technology (NIST)'s Visiting Committee on Advanced Technology (VCAT or Committee) will meet on Wednesday, February 12, 2020, from 8:30 a.m. to 5:00 p.m. Eastern Time, and Thursday, February 13, 2020, from 8:30 a.m. to 12:00 p.m. Eastern Time.

DATES: The VCAT will meet on Wednesday, February 12, 2020, from 8:30 a.m. to 5:00 p.m. and Thursday, February 13, 2020, from 8:30 a.m. to 12:00 p.m. Eastern Time.

ADDRESSES: The meeting will be held in the Portrait Room, Administration Building, at NIST, 100 Bureau Drive, Gaithersburg, Maryland 20899, with an option to participate via webinar. Please note admittance instructions under the **SUPPLEMENTARY INFORMATION** section of this notice.

FOR FURTHER INFORMATION CONTACT: Stephanie Shaw, VCAT, NIST, 100 Bureau Drive, Mail Stop 1060, Gaithersburg, Maryland 20899–1060, telephone number 301–975–2667. Ms. Shaw's email address is *stephanie.shaw@nist.gov.*

SUPPLEMENTARY INFORMATION:

Authority: 15 U.S.C. 278, as amended, and the Federal Advisory Committee Act, as amended, 5 U.S.C. App.

Pursuant to the Federal Advisory Committee Act, as amended, 5 U.S.C. App., notice is hereby given that the VCAT will meet on Wednesday, February 12, 2020, from 8:30 a.m. to 5:00 p.m. Eastern Time, and Thursday, February 13, 2020, from 8:30 a.m. to 12:00 p.m. Eastern Time. The meeting will be open to the public. The VCAT is composed of not fewer than 9 members appointed by the NIST Director, eminent in such fields as business, research, new product development, engineering, labor, education, management consulting, environment, and international relations. The primary purpose of this meeting is for the VCAT to review and make recommendations regarding general policy for NIST, its organization, its budget, and its programs within the framework of applicable national policies as set forth by the President and the Congress. The agenda will include an update on major programs at NIST. The Committee also will present its initial observations, findings, and recommendations for the 2019 VCAT Annual Report. The agenda may change to accommodate Committee business. The final agenda will be posted on the NIST website at *http://www.nist.gov/director/vcat/agenda.cfm.*

Individuals and representatives of organizations who would like to offer comments and suggestions related to the Committee's business are invited to request a place on the agenda. Approximately one-half hour will be reserved for public comments and speaking times will be assigned on a first-come, first-serve basis. The amount of time per speaker will be determined by the number of requests received but, is likely to be about 3 minutes each. The exact time for public comments will be included in the final agenda that will be posted on the NIST website at *http://www.nist.gov/director/vcat/agenda.cfm.* Questions from the public will not be considered during this period. Speakers who wish to expand upon their oral statements, those who had wished to speak but could not be accommodated on the agenda, and those who were unable to attend in person are invited to submit written statements to VCAT, NIST, 100 Bureau Drive, MS 1060, Gaithersburg, Maryland 20899, via fax at 301–216–0529 or electronically by email to *stephanie.shaw@nist.gov.*

All visitors to the NIST site are required to pre-register to be admitted. Please submit your name, time of arrival, email address, and phone number to Stephanie Shaw by 5:00 p.m. Eastern Time, Wednesday, February 5, 2020. Non-U.S. citizens must submit additional information; please contact Ms. Shaw. Ms. Shaw's email address is *stephanie.shaw@nist.gov* and her phone number is 301–975–2667. For participants attending in person, please note that federal agencies, including NIST, can only accept a state-issued driver's license or identification card for access to federal facilities if such license or identification card is issued by a state that is compliant with the REAL ID Act of 2005 (Pub. L. 109–13), or by a state that has an extension for REAL ID compliance. NIST currently accepts other forms of federal-issued identification in lieu of a state-issued driver's license. For detailed information please contact Ms. Shaw at 301–975–2667 or visit: *http://nist.gov/public_affairs/visitor/.* For participants attending via webinar, please contact Ms. Shaw at 301–975–2667 or *stephanie.shaw@nist.gov* for detailed instructions on how to join the webinar by 5:00 p.m. Eastern Time, Monday,

Dated: February 10, 2020.

Kevin A. Kimball,

Chief of Staff.

[FR Doc. 2020–00206 Filed 1–9–20; 8:45 am]

BILLING CODE 3510–13–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XA007]

New England Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of public meeting.

SUMMARY: The New England Fishery Management Council (Council, NEFMC) will hold a three-day meeting to consider actions affecting New England fisheries in the exclusive economic zone (EEZ).

DATES: The meeting will be held on Tuesday, Wednesday, and Thursday, January 28, 29, and 30, 2020, beginning at 9 a.m. on January 28 and 8:30 a.m. on January 29 and 30.

ADDRESSES: The meeting will be held at the Portsmouth Harbor Events and Conference Center, 100 Deer Street at 22

Portwalk Place, Portsmouth, NH 03801; telephone: (603) 422–6114; online at *https://www.portsmouthharborevents.com*.

Council address: New England Fishery Management Council, 50 Water Street, Mill 2, Newburyport, MA 01950; telephone: (978) 465–0492; *www.nefmc.org*.

FOR FURTHER INFORMATION CONTACT: Thomas A. Nies, Executive Director, New England Fishery Management Council; telephone: (978) 465–0492, ext. 113.

SUPPLEMENTARY INFORMATION:

Agenda

Tuesday, January 28, 2020

After introductions and brief announcements, the meeting will begin with reports from the Council Chairman and Executive Director, NMFS's Regional Administrator for the Greater Atlantic Regional Fisheries Office (GARFO), liaisons from the Northeast Fisheries Science Center (NEFSC) and Mid-Atlantic Fishery Management Council, staff from the Atlantic States Marine Fisheries Commission (ASMFC), and representatives from NOAA General Counsel, NOAA's Office of Law Enforcement, and the U.S. Coast Guard. The Council then will receive two updates on offshore energy projects in the Northeast—one from the Bureau of Ocean Energy Management and the other from the Habitat Committee. The Council also will receive other habitat updates and develop comments on a Great South Channel-related Exempted Fishing Permit (EFP) if the notice is available prior to the meeting. Next, representatives from the Northeast Regional Ocean Council and the Responsible Offshore Development Alliance will provide an overview of upcoming work on the Northeast Ocean Data Portal using industry input.

Following the lunch break, the Council will hear from Dr. Michael Rubino, senior advisor for seafood strategy at NOAA Fisheries, about his role within the agency, as well as seafood market development options. The Council then will view a video highlighting the U.S. scallop delegation's June 2019 visit to Hokkaido, Japan to learn about seed-sowing practices used in Japanese scallop aquaculture. The delegation included representatives from the scallop industry, NMFS, academia, and Council staff. Next, the Council will discuss and take final action on a Commercial eVTR Omnibus Framework, which was developed jointly with the Mid-Atlantic Fishery Management Council. The framework proposes to require that vessel trip reports (VTRs) be submitted electronically as eVTRs instead of on paper for all commercial species managed by both Councils. Next, the Council will receive an overview of new South Atlantic electronic vessel reporting requirements for for-hire charter and headboat vessels with South Atlantic permits. The Council will close out the day with a report on the November 2019 annual meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT). The Council also will hear comments from the Advisory Committee to the U.S. Section to ICCAT.

Wednesday, January 29, 2020

The Council will begin the day with a presentation from MIT Sea Grant on the use of sociocultural information in the NEFMC process and discuss recent findings. Next, the Scientific and Statistical Committee (SSC) will provide the Council with acceptable biological catch (ABC) recommendations for four groundfish stocks that were remanded for further review as a result of the Council's December 2019 meeting. The ABC recommendations will be for American plaice, Gulf of Maine haddock, Georges Bank haddock, and Atlantic pollock for fishing years 2020–22. Following the SSC report, members of the public will have the opportunity to speak during an open comment period on issues that relate to Council business but are not included on the published agenda for this meeting. The Council asks the public to limit remarks to 3–5 minutes. After that, the Groundfish Committee will begin its report, which will run for the remainder of the day with a lunch break scheduled partway through. The report will cover two items. First, the Council will develop recommendations for submission to GARFO on fishing year 2020 recreational measures for Gulf of Maine cod and Gulf of Maine haddock. Second, the Council will review, discuss, and approve the Draft Environmental Impact Statement (DEIS) for Monitoring Amendment 23 and select preliminary preferred alternatives. The DEIS will contain the full range of alternatives for upcoming public hearings. At the conclusion of this discussion, the Council will adjourn for the day.

Thursday, January 30, 2020

The third day of the meeting will begin with a closed session during which the Council will consult on SSC appointments for 2020–22 and review personnel issues. The meeting then will be open to the public and begin with a presentation on the final NEFSC/GARFO Regional Strategic Plan for 2020–23, followed by an overview of the accompanying annual implementation plan. The Northeast Fisheries Science Center then will provide a presentation on its annual planning process and explain how the center uses the New England Fishery Management Council's research priorities. Next, the Council will receive an update on Congressional activities and discuss any pending legislation. The Small-Mesh Multispecies (Whiting) Committee report will follow. The Council will approve the range of alternatives for an action that is under development to rebuild southern red hake.

Following the lunch break, the Council will discuss Atlantic herring issues. The Council will initiate Framework Adjustment 8 to the Atlantic Herring Fishery Management Plan, which will contain fishing year 2021–23 specifications and consider adjusting herring measures that potentially inhibit the Atlantic mackerel fishery from achieving optimum yield. Next, the Council will receive an update from NMFS on the Omnibus Industry-Funded Monitoring (IFM) Amendment and its associated herring measures. Finally, the Council will close out the meeting with ''other business.''

Although non-emergency issues not contained on this agenda may come before the Council for discussion, those issues may not be the subject of formal action during this meeting. Council action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act, provided the public has been notified of the Council's intent to take final action to address the emergency. The public also should be aware that the meeting will be recorded. Consistent with 16 U.S.C. 1852, a copy of the recording is available upon request.

Special Accommodations

This meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Thomas A. Nies (see **ADDRESSES**) at least 5 days prior to the meeting date.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: January 6, 2020.

Tracey L. Thompson,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2020–00186 Filed 1–9–20; 8:45 am]

BILLING CODE 3510–22–P

COMMITTEE FOR PURCHASE FROM PEOPLE WHO ARE BLIND OR SEVERELY DISABLED

Procurement List; Proposed Deletions

AGENCY: Committee for Purchase From People Who Are Blind or Severely Disabled.

ACTION: Proposed deletions from the Procurement List.

SUMMARY: The Committee is proposing to delete services previously furnished by nonprofit agencies employing persons who are blind or have other severe disabilities.

DATES: *Comments must be received on or before:* February 9, 2020.

ADDRESSES: Committee for Purchase From People Who Are Blind or Severely Disabled, 1401 S Clark Street, Suite 715, Arlington, Virginia 22202–4149.

FOR FURTHER INFORMATION CONTACT: For further information or to submit comments contact: Michael R. Jurkowski, Telephone: (703) 603–2117, Fax: (703) 603–0655, or email *CMTEFedReg@AbilityOne.gov.*

SUPPLEMENTARY INFORMATION: This notice is published pursuant to 41 U.S.C. 8503(a)(2) and 41 CFR 51–2.3. Its purpose is to provide interested persons an opportunity to submit comments on the proposed actions.

Deletions

The following services are proposed for deletion from the Procurement List:

Services

Service Type: Operation of Postal Service Center
Mandatory for: Fort Riley, 802 Marshall Loop, Fort Riley, KS
Mandatory Source of Supply: Skookum Educational Programs, Bremerton, WA
Contracting Activity: Dept of the Army, W6QM MICC–FT Riley

Service Type: Janitorial/Custodial
Mandatory for: Department of Veterans Affairs, VA Outpatient Clinic, 104 Alex Lane, Charleston, WV
Mandatory Source of Supply: Goodwill Industries of Kanawha Valley, Charleston, WV
Contracting Activity: Veterans Affairs, Department of, 581–Huntington

Service Type: Administrative Services
Mandatory for: Office of the U.S. Trade Representative, 1724 F Street NW, and 600 17th Street NW, Washington, DC
Mandatory Source of Supply: ServiceSource, Inc., Oakton, VA
Contracting Activity: Executive Office of the President, Executive Office of the President

Service Type: Central Facility Management
Mandatory for: Social Security Administration: Trust Fund Building, 50 North 3rd Street, Chambersburg, PA
Mandatory Source of Supply: Goodwill Services, Inc., Harrisburg, PA
Contracting Activity: General Services Administration, FPDS Agency Coordinator

Service Type: Janitorial/Custodial
Mandatory for: National Park Service: Gateway National Recreational Area, Building 210, Staten Island, NY
Mandatory Source of Supply: Fedcap Rehabilitation Services, Inc., New York, NY
Contracting Activity: General Services Administration, FPDS Agency Coordinator

Service Type: Janitorial/Custodial
Mandatory for: Veterans Outreach Center: 954 Penn Avenue, Pittsburgh, PA
Mandatory Source of Supply: ACHIEVA Support, Pittsburgh, PA
Contracting Activity: Veterans Affairs, Department of, NAC

Service Type: Cutting and Assembly
Mandatory for: Robins Air Force Base, GA
Mandatory Source of Supply: Middle Georgia Diversified Industries, Inc., Dublin, GA
Contracting Activity: Dept of the Air Force, FA8501 AFSC PZIO

Service Type: Duplication of Official Use Documents
Mandatory for: Government Printing Office: 710 North Capitol & H Street NW, Washington, DC
Mandatory Source of Supply: Alliance, Inc., Baltimore, MD
Contracting Activity: Government Printing Office

Patricia Briscoe,
Deputy Director, Business Operations (Pricing and Information Management).

[FR Doc. 2020–00211 Filed 1–9–20; 8:45 am]
BILLING CODE 6353–01–P

COMMITTEE FOR PURCHASE FROM PEOPLE WHO ARE BLIND OR SEVERELY DISABLED

Procurement List; Addition and Deletions

AGENCY: Committee for Purchase From People Who Are Blind or Severely Disabled.

ACTION: Addition to and deletions from the Procurement List.

SUMMARY: This action add service to the Procurement List that will be furnished by nonprofit agencies employing persons who are blind or have other severe disabilities, and deletes services from the Procurement List previously furnished by such agencies.

DATES: *Date added to and deleted from the Procurement List:* February 9, 2020.

ADDRESSES: Committee for Purchase From People Who Are Blind or Severely Disabled, 1401 S Clark Street, Suite 715, Arlington, Virginia 22202–4149.

FOR FURTHER INFORMATION CONTACT: Michael R. Jurkowski, Telephone: (703) 603–2117, Fax: (703) 603–0655, or email *CMTEFedReg@AbilityOne.gov.*

SUPPLEMENTARY INFORMATION:

Additions

On 11/22/2019, the Committee for Purchase From People Who Are Blind or Severely Disabled published notice of proposed additions to the Procurement List. This notice is published pursuant to 41 U.S.C. 8503(a)(2) and 41 CFR 51–2.3.

Regulatory Flexibility Act Certification

I certify that the following action will not have a significant impact on a substantial number of small entities. The major factors considered for this certification were:

1. The action will not result in any additional reporting, recordkeeping or other compliance requirements for small entities other than the small organizations that will furnish the service to the Government.
2. The action will result in authorizing small entities to furnish the service to the Government.
3. There are no known regulatory alternatives which would accomplish the objectives of the Javits-Wagner-O'Day Act (41 U.S.C. 8501–8506) in connection with the service proposed for addition to the Procurement List.

End of Certification

Accordingly, the following service is added to the Procurement List:

Service

Service Type: Warehouse and Distribution Services
Mandatory for: U.S. Department of Justice, Office of Community Oriented Policing Services, Washington, DC
Mandatory Source of Supply: Melwood Horticultural Training Center, Inc., Upper Marlboro, MD
Contracting Activity: OFFICES, BOARDS AND DIVISIONS, U.S. DEPT OF JUSTICE

Deletions

On 12/6/2019, the Committee for Purchase From People Who Are Blind or Severely Disabled published notice of proposed deletions from the Procurement List.

After consideration of the relevant matter presented, the Committee has determined that the services listed below are no longer suitable for procurement by the Federal Government under 41 U.S.C. 8501–8506 and 41 CFR 51–2.4.

Regulatory Flexibility Act Certification

I certify that the following action will not have a significant impact on a substantial number of small entities.

The major factors considered for this certification were:

1. The action will not result in additional reporting, recordkeeping or other compliance requirements for small entities.

2. The action may result in authorizing small entities to furnish the services to the Government.

3. There are no known regulatory alternatives which would accomplish the objectives of the Javits-Wagner-O'Day Act (41 U.S.C. 8501–8506) in connection with the services deleted from the Procurement List.

End of Certification

Accordingly, the following services are deleted from the Procurement List:

Services

Service Type: Janitorial/Grounds Maintenance
Mandatory for: VA Outpatient Clinic, Rome, NY
Mandatory Source of Supply: The Arc, Oneida-Lewis Chapter-NYSARC, Inc., Utica, NY
Contracting Activity: VETERANS AFFAIRS, DEPARTMENT OF, NAC

Service Type: Janitorial/Custodial
Mandatory for: U.S. Federal Building: 45 Bay Street, Staten Island, NY
Mandatory Source of Supply: Fedcap Rehabilitation Services, Inc., New York, NY
Contracting Activity: GENERAL SERVICES ADMINISTRATION, FPDS AGENCY COORDINATOR

Service Type: Janitorial/Custodial
Mandatory for: Auke Bay Station Post Office: 11899 Glacier Highway, Auke Bay, AK
Mandatory Source of Supply: REACH, Inc., Juneau, AK
Contracting Activity: U.S. Postal Service, Washington, DC

Service Type: Janitorial/Custodial
Mandatory for: DCMA Office, 366 Avenue D, Building 7216, Dyess AFB, TX
Mandatory Source of Supply: Training, Rehabilitation, & Development Institute, Inc., San Antonio, TX
Contracting Activity: DEFENSE CONTRACT MANAGEMENT AGENCY (DCMA), DEFENSE CONTRACT MANAGMENT OFFICE

Service Type: Janitorial/Custodial
Mandatory for: Veterans Affairs Building: 252 Seventh Avenue, New York, NY
Mandatory Source of Supply: Fedcap Rehabilitation Services, Inc., New York, NY
Contracting Activity: VETERANS AFFAIRS, DEPARTMENT OF, NAC

Service Type: Janitorial/Custodial
Mandatory for: Phillips Buildings Complex: 7900 and 7920 Norfolk Avenue, 4915 St. Elmo Avenue, Bethesda, MD
Contracting Activity: NUCLEAR REGULATORY COMMISSION, OFFICE OF ADMINISTRATION

Service Type: Janitorial/Custodial
Mandatory for: Naval & Marine Corps Reserve Center: 30 Woodward Avenue, New Haven, CT
Mandatory Source of Supply: CW Resources, Inc., New Britain, CT
Contracting Activity: DEPT OF THE NAVY, U S FLEET FORCES COMMAND

Patricia Briscoe,

Deputy Director, Business Operations (Pricing and Information Management).

[FR Doc. 2020–00212 Filed 1–9–20; 8:45 am]

BILLING CODE 6353–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

Take notice that the Commission received the following exempt wholesale generator filings:

Docket Numbers: EG20–62–000.
Applicants: RWE Renewables Americas, LLC.
Description: Self-Certification of Exempt Wholesale Generator Status of Cranell Wind Farm, LLC.
Filed Date: 1/3/20.
Accession Number: 20200103–5095.
Comments Due: 5 p.m. ET 1/24/20.

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER10–1910–018; ER10–1911–018.
Applicants: Duquesne Light Company, Duquesne Power, LLC.
Description: Triennial Market-Based Rate Update of the Duquesne MBR Sellers, et al.
Filed Date: 12/31/19.
Accession Number: 20191231–5326.
Comments Due: 5 p.m. ET 3/2/20.

Docket Numbers: ER10–2822–018; ER16–1250–010; ER10–2824–002; ER10–2825–003; ER10–2831–003; ER10–2957–003; ER10–2995–003; ER10–2996–002; ER10–2998–002; ER10–2999–002; ER10–3000–002; ER10–3029–002; ER10–1776–002; ER19–2360–001; ER10–3009–004; ER11–2196–010; ER17–1769–003; ER10–3013–003; ER10–3014–002; ER11–1243–002.
Applicants: Atlantic Renewables Projects II LLC, Avangrid Renewables, LLC, Big Horn Wind Project LLC, Big Horn II Wind Project LLC, Colorado Green Holdings LLC, Hay Canyon Wind LLC, Juniper Canyon Wind Power LLC, Klamath Energy LLC, Klamath Generation LLC, Klondike Wind Power LLC, Klondike Wind Power II LLC, Klondike Wind Power III LLC, Leaning Juniper Wind Power II LLC, Montague Wind Power Facility, LLC, Pebble Springs Wind LLC, San Luis Solar LLC, Solar Star Oregon II, LLC, Star Point Wind Project LLC, Twin Buttes Wind LLC, Twin Buttes Wind II LLC.
Description: Updated Market Power Analysis for the Northwest Region of Avangrid Northwest MBR Sellers, et al.
Filed Date: 12/31/19.
Accession Number: 20191231–5316.
Comments Due: 5 p.m. ET 3/2/20.

Docket Numbers: ER20–391–002.
Applicants: J. Aron & Company LLC.
Description: Updated Market Power Analysis for the Northwest Region of J. Aron & Company LLC.
Filed Date: 12/30/19.
Accession Number: 20191230–5281.
Comments Due: 5 p.m. ET 2/28/20.

Docket Numbers: ER20–736–000.
Applicants: PJM Interconnection, L.L.C.
Description: § 205(d) Rate Filing: Revisions to Sch. 12-Appx A: December 2019 RTEP, 30-day Comments due to be effective 4/2/2020.
Filed Date: 1/3/20.
Accession Number: 20200103–5129.
Comments Due: 5 p.m. ET 2/3/20.

Docket Numbers: ER20–737–000.
Applicants: PJM Interconnection, L.L.C.
Description: § 205(d) Rate Filing: Original WMPA, SA No. 5545; Queue No. AE2–125 to be effective 12/11/2019.
Filed Date: 1/6/20.
Accession Number: 20200106–5002.
Comments Due: 5 p.m. ET 1/27/20.

Docket Numbers: ER20–738–000.
Applicants: PJM Interconnection, L.L.C.
Description: § 205(d) Rate Filing: Third Revised Service Agreement No. 2775; Queue No. AB2–092 to be effective 12/5/2019.
Filed Date: 1/6/20.
Accession Number: 20200106–5090.
Comments Due: 5 p.m. ET 1/27/20.

Docket Numbers: ER20–739–000.
Applicants: ISO New England Inc.
Description: § 205(d) Rate Filing: Cost Recovery Mechanism for Facilities Designated Critical to Derivation of IROL to be effective 3/6/2020.
Filed Date: 1/6/20.
Accession Number: 20200106–5127.
Comments Due: 5 p.m. ET 1/27/20.

Docket Numbers: ER20–740–000.
Applicants: Midcontinent Independent System Operator, Inc.
Description: § 205(d) Rate Filing: 2020–01–06_Consolidation and True Up Filing for CTA to be effective 2/2/2020.
Filed Date: 1/6/20.
Accession Number: 20200106–5128.
Comments Due: 5 p.m. ET 1/27/20.

Docket Numbers: ER20–741–000.
Applicants: Midcontinent Independent System Operator, Inc., Ameren Illinois Company.

Description: § 205(d) Rate Filing: 2020–01–06_SA 3224 Ameren Illinois-Bishop Hill FSA to be effective 3/7/2020.

Filed Date: 1/6/20.

Accession Number: 20200106–5133.

Comments Due: 5 p.m. ET 1/27/20.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: January 6, 2020.

Kimberly D. Bose,

Secretary.

[FR Doc. 2020–00223 Filed 1–9–20; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket Nos. CP19–509–001; CP19–509–000]

Texas Eastern Transmission, LP; Notice of Application

Take notice that on December 19, 2019, Texas Eastern Transmission, LP (Texas Eastern), 5400 Westheimer Court, Houston, Texas 77056, filed, pursuant to section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations, an amendment to its application in Docket No. CP19–509–000 which requested authorization to construct and operate the Marshall County Mine Panels 19E Project located in Marshall County, West Virginia.

Texas Eastern is proposing to excavate, elevate, and replace certain small segments of four different pipelines (Lines 10, 15, 25, and 30) and appurtenances in order to maintain operation of its facilities for the duration of longwall mining activities planned by Marshall Coal in the area beneath Texas Eastern's pipelines. The amendment to its application requests to (1) include construction activities related to segments of its four pipelines that traverse the Marshall County Coal Company's Mine Panels 19E and 20E; (2) modify the timing for completion of Project activities from October 2021 to October 2022; and (3) request a Commission order by April 30, 2020. The construction activities proposed in the amendment replace in their entirety the construction activities proposed in the application. The total length of pipeline segments to be excavated increased to 4.39 miles from 2.26 miles. The estimated cost of the project increased to approximately $77 million from approximately $38 million, all as more fully described in its application which is on file with the Commission and open to public inspection.

The filing is available for review at the Commission in the Public Reference Room or may be viewed on the Commission's website web at *http://www.ferc.gov* using the ''eLibrary'' link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, contact FERC at *FERCOnlineSupport@ferc.gov* or call toll-free, (886) 208–3676 or TYY, (202) 502–8659.

Any questions concerning this application may be directed to Lisa A. Connolly, Director, Rates and Certificates, Texas Eastern Transmission, LP, P.O. Box 1642 Houston, Texas 77251–1642, by telephone at (713) 627–4102, or by email *lisa.connolly@enbridge.com.*

Pursuant to section 157.9 of the Commission's rules, 18 CFR 157.9, within 90 days of this Notice the Commission staff will either: complete its environmental assessment (EA) and place it into the Commission's public record (eLibrary) for this proceeding; or issue a Notice of Schedule for Environmental Review. If a Notice of Schedule for Environmental Review is issued, it will indicate, among other milestones, the anticipated date for the Commission staff's issuance of the EA for this proposal. The filing of the EA in the Commission's public record for this proceeding or the issuance of a Notice of Schedule for Environmental Review will serve to notify federal and state agencies of the timing for the completion of all necessary reviews, and the subsequent need to complete all federal authorizations within 90 days of the date of issuance of the Commission staff's EA.

There are two ways to become involved in the Commission's review of this project. First, any person wishing to obtain legal status by becoming a party to the proceedings for this project should, on or before the comment date stated below file with the Federal Energy Regulatory Commission, 888 First Street NE, Washington, DC 20426, a motion to intervene in accordance with the requirements of the Commission's Rules of Practice and Procedure (18 CFR 385.214 or 385.211) and the Regulations under the NGA (18 CFR 157.10). A person obtaining party status will be placed on the service list maintained by the Secretary of the Commission and will receive copies of all documents filed by the applicant and by all other parties. A party must submit 3 copies of filings made in the proceeding with the Commission and must provide a copy to the applicant and to every other party. Only parties to the proceeding can ask for court review of Commission orders in the proceeding.

However, a person does not have to intervene in order to have comments considered. The second way to participate is by filing with the Secretary of the Commission, as soon as possible, an original and two copies of comments in support of or in opposition to this project. The Commission will consider these comments in determining the appropriate action to be taken, but the filing of a comment alone will not serve to make the filer a party to the proceeding. The Commission's rules require that persons filing comments in opposition to the project provide copies of their protests only to the party or parties directly involved in the protest.

Persons who wish to comment only on the environmental review of this project should submit an original and two copies of their comments to the Secretary of the Commission. Environmental commenters will be placed on the Commission's environmental mailing list and will be notified of any meetings associated with the Commission's environmental review process. Environmental commenters will not be required to serve copies of filed documents on all other parties. However, the non-party commenters will not receive copies of all documents filed by other parties or issued by the Commission and will not have the right to seek court review of the Commission's final order.

As of the February 27, 2018 date of the Commission's order in Docket No. CP16–4–001, the Commission will apply its revised practice concerning out-of-time motions to intervene in any new Natural Gas Act section 3 or section 7 proceeding.[1] Persons desiring to

[1] *Tennessee Gas Pipeline Company, L.L.C.,* 162 FERC ¶ 61,167 at ¶ 50 (2018).

become a party to a certificate proceeding are to intervene in a timely manner. If seeking to intervene out-of-time, the movant is required to ''show good cause why the time limitation should be waived,'' and should provide justification by reference to factors set forth in Rule 214(d)(1) of the Commission's Rules and Regulations.[2]

The Commission strongly encourages electronic filings of comments, protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 3 copies of the protest or intervention to the Federal Energy regulatory Commission, 888 First Street NE, Washington, DC 20426.

Comment Date: 5 p.m. Eastern time on January 27, 2020.

Dated: January 6, 2020.

Kimberly D. Bose,

Secretary.

[FR Doc. 2020–00219 Filed 1–9–20; 8:45 am]

BILLING CODE 6717–01–P

[2] 18 CFR 385.214(d)(1).

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

Take notice that the Commission received the following exempt wholesale generator filings:

Docket Numbers: EG20–61–000.
Applicants: Wilderness Line Holdings, LLC.
Description: Self-Certification of Exempt Wholesale Generator Status of Wilderness Line Holdings, LLC.
Filed Date: 1/2/20.
Accession Number: 20200102–5268.
Comments Due: 5 p.m. ET 1/23/20.

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER11–2447–004.
Applicants: Pacific Northwest Generating Cooperative.
Description: Updated Market Power Analysis [Confidential and Confidential Workpapers] of Pacific Northwest Generating Cooperative.
Filed Date: 12/31/19.
Accession Number: 20191231–5329.
Comments Due: 5 p.m. ET 3/2/20.

Docket Numbers: ER14–225–007.
Applicants: New Brunswick Energy Marketing Corporation.
Description: Updated Market Power Analysis for the Northeast Region of New Brunswick Energy Marketing Corporation.
Filed Date: 12/30/19.
Accession Number: 20191230–5282.
Comments Due: 5 p.m. ET 2/28/20.

Docket Numbers: ER17–1519–003.
Applicants: PECO Energy Company, PJM Interconnection, L.L.C.
Description: Compliance filing: PECO submits filing in compliance with the Commission's 12/5/2019 Order to be effective 12/5/2019.
Filed Date: 1/2/20.
Accession Number: 20200102–5136.
Comments Due: 5 p.m. ET 1/23/20.

Docket Numbers: ER18–169–004.
Applicants: Southern California Edison Company.
Description: Compliance filing: SCE Revised TO Apdx IX Attach 1 Formula Rate Protocols ER18–169, ER18–2440 to be effective 11/16/2018.
Filed Date: 1/2/20.
Accession Number: 20200102–5290.
Comments Due: 5 p.m. ET 1/23/20.

Docket Numbers: ER19–1910–002.
Applicants: Southwest Power Pool, Inc.
Description: Compliance filing: Compliance Filing—Oklahoma Gas and Electric Company Settlement in EL18–58–000 to be effective 1/1/2018.
Filed Date: 1/2/20.
Accession Number: 20200102–5256.
Comments Due: 5 p.m. ET 1/23/20.

Docket Numbers: ER19–2774–002.
Applicants: Public Service Company of Colorado.
Description: Compliance filing: OATT–Att–N–LGIP Reform-Compliance to be effective 12/5/2019.
Filed Date: 1/3/20.
Accession Number: 20200103–5003.
Comments Due: 5 p.m. ET 1/24/20.

Docket Numbers: ER20–731–000.
Applicants: Deseret Generation & Transmission Co-operative, Inc.
Description: Tariff Cancellation: RS 25 Termination of Concurrence to be effective 12/31/2019.
Filed Date: 1/2/20.
Accession Number: 20200102–5278.
Comments Due: 5 p.m. ET 1/23/20.

Docket Numbers: ER20–732–000.
Applicants: California Independent System Operator Corporation.
Description: § 205(d) Rate Filing: 2020–01–02 Deliverability Assessment Methodology Enhancements Amendment to be effective 3/3/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5288.
Comments Due: 5 p.m. ET 1/23/20.

Docket Numbers: ER20–733–000.
Applicants: PJM Interconnection, L.L.C.
Description: § 205(d) Rate Filing: Amendment to WMPA, SA No. 5374; Queue Position AE1–027 (amend) to be effective 3/29/2019.
Filed Date: 1/2/20.
Accession Number: 20200102–5265.
Comments Due: 5 p.m. ET 1/23/20.

Docket Numbers: ER20–734–000.
Applicants: Alabama Power Company.
Description: § 205(d) Rate Filing: County Line Solar LGIA Filing to be effective 12/19/2019.
Filed Date: 1/3/20.
Accession Number: 20200103–5075.
Comments Due: 5 p.m. ET 1/24/20.

Docket Numbers: ER20–735–000.
Applicants: Alabama Power Company.
Description: § 205(d) Rate Filing: Decatur Solar Energy Center LGIA Filing to be effective 12/19/2019.
Filed Date: 1/3/20.
Accession Number: 20200103–5078.
Comments Due: 5 p.m. ET 1/24/20.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: January 3, 2020.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2020–00240 Filed 1–9–20; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. AC20–45–000]

Williams Companies Inc; Notice of Filing

Take notice that on December 26, 2019, Williams Companies Inc filed a Request for Waiver of Corporate Officer Certification Requirement for FERC Form 6 and 6Q for the Fourth Quarter 2013 through the First Quarter 2019.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of

the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. Anyone filing a motion to intervene or protest must serve a copy of that document on the Applicant.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE, Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the website that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comments: 5:00 p.m. Eastern Time on February 5, 2020.

Dated: January 6, 2020.

Kimberly D. Bose,

Secretary.

[FR Doc. 2020–00224 Filed 1–9–20; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. CP20–30–000]

Texas Eastern Transmission, LP; Notice of Application

On December 19, 2019, Texas Eastern Transmission, LP (Texas Eastern), 5400 Westheimer Court, Houston, Texas 77056–5310, filed an application pursuant to section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Federal Energy Regulatory Commission's (Commission) regulations for its proposed Middlesex Extension Project (Project). Specifically, Texas Eastern requests: (1) Authorization under NGA Section 7(c) to construct, install, own, operate and maintain 1.55 miles of 20-inch-diameter pipeline, a new metering and regulating station, 0.20 miles of 16-inch-diameter interconnecting piping, and related appurtenances and ancillary facilities to provide natural gas transportation to interconnects with Transcontinental Gas Pipe Line Company, LLC's (Transco) Mainline system and Transco's existing Woodbridge Lateral for ultimate delivery to the 725-Megawatt natural gas-fueled combined-cycle Woodbridge Energy Center owned by CPV Shore Holdings, LLC and located in Woodbridge Township, New Jersey; (2) authority to establish initial incremental recourse rates for firm and interruptible transportation service on the Middlesex Extension; and (3) any waivers, authority, and further relief as may be necessary to implement the proposal contain in its application, all as more fully set forth in the application, which is open to the public for inspection. The filing may also be viewed on the web at *http://www.ferc.gov* using the ''eLibrary'' link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, contact FERC at *FERCOnlineSupport@ferc.gov* or call toll-free, (866) 208–3676 or TTY, (202) 502–8659.

Any questions regarding Texas Eastern's application should be directed to Berk Donaldson, Director, Rates and Certificates, Texas Eastern Transmission, LP, P.O. Box 1642, Houston, Texas 77251–1642, or phone (713) 627–4488, or fax (713) 627–5947, or by email *berk.donaldson@enbridge.com.*

Pursuant to Section 157.9 of the Commission's rules, 18 CFR 157.9, within 90 days of this Notice the Commission staff will either: Complete its environmental assessment (EA) and place it into the Commission's public record (eLibrary) for this proceeding, or issue a Notice of Schedule for Environmental Review. If a Notice of Schedule for Environmental Review is issued, it will indicate, among other milestones, the anticipated date for the Commission staff's issuance of the EA for this proposal. The filing of the EA in the Commission's public record for this proceeding or the issuance of a Notice of Schedule for Environmental Review will serve to notify federal and state agencies of the timing for the completion of all necessary reviews, and the subsequent need to complete all federal authorizations within 90 days of the date of issuance of the Commission staff's EA.

There are two ways to become involved in the Commission's review of this project. First, any person wishing to obtain legal status by becoming a party to the proceedings for this project should, on or before the comment date stated below file with the Federal Energy Regulatory Commission, 888 First Street NE, Washington, DC 20426, a motion to intervene in accordance with the requirements of the Commission's Rules of Practice and Procedure (18 CFR 385.214 or 385.211) and the Regulations under the NGA (18 CFR 157.10). A person obtaining party status will be placed on the service list maintained by the Secretary of the Commission and will receive copies of all documents filed by the applicant and by all other parties. A party must submit 7 copies of filings made in the proceeding with the Commission and must mail a copy to the applicant and to every other party. Only parties to the proceeding can ask for court review of Commission orders in the proceeding.

However, a person does not have to intervene in order to have comments considered. The second way to participate is by filing with the Secretary of the Commission, as soon as possible, an original and two copies of comments in support of or in opposition to this project. The Commission will consider these comments in determining the appropriate action to be taken, but the filing of a comment alone will not serve to make the filer a party to the proceeding. The Commission's rules require that persons filing comments in opposition to the project provide copies of their protests only to the party or parties directly involved in the protest.

Persons who wish to comment only on the environmental review of this project should submit an original and two copies of their comments to the Secretary of the Commission. Environmental commentors will be placed on the Commission's environmental mailing list, will receive copies of the environmental documents, and will be notified of meetings associated with the Commission's environmental review process. Environmental commentors will not be required to serve copies of filed documents on all other parties. However, the non-party commentors will not receive copies of all documents filed by other parties or issued by the Commission (except for the mailing of environmental documents issued by the Commission) and will not have the right to seek court review of the Commission's final order.

The Commission strongly encourages electronic filings of comments, protests and interventions in lieu of paper using the ''eFiling'' link at *http://*

www.ferc.gov. Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy regulatory Commission, 888 First Street NE, Washington, DC 20426.

Comment Date: 5 p.m. Eastern Time on January 27, 2020.

Dated: January 6, 2020.

Kimberly D. Bose,

Secretary.

[FR Doc. 2020–00220 Filed 1–9–20; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings

Take notice that the Commission has received the following Natural Gas Pipeline Rate and Refund Report filings:

Docket Number: PR20–19–000.
Applicants: NET Mexico Pipeline Partners, LLC.
Description: Tariff filing per 284.123(b)(2)+(g): Petition for NGPA Section 311 Rate Approval to be effective 12/30/2019 under PR20–19 Filing.
Filed Date: 12/31/19.
Accession Number: 201912315075.
Comments Due: 5 p.m. ET 1/21/20.
284.123(g) Protests Due: 5 p.m. ET 3/2/20.

Docket Number: PR20–20–000.
Applicants: American Midstream (Alabama Intrastate), LLC.
Description: Tariff filing per 284.123(b)(2)+(g): American Midstream (Alabama Intrastate), LLC Rate Petition to be effective 12/31/2019 under PR20–20.
Filed Date: 1/2/20.
Accession Number: 202001025132.
Comments Due: 5 p.m. ET 1/23/20.
284.123(g) Protests Due: 5 p.m. ET 3/2/20.

Docket Numbers: RP20–393–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: § 4(d) Rate Filing: 010220 Negotiated Rates—Wells Fargo Commodities, LLC R–7810–17 to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5015.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–394–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: § 4(d) Rate Filing: 010220 Negotiated Rates—Wells Fargo Commodities, LLC R–7810–18 to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5016.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–395–000.
Applicants: Rover Pipeline LLC.
Description: § 4(d) Rate Filing: Summary of Negotiated Rate Capacity Release Agreements on 1–2–20 to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5061.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–397–000.
Applicants: Equitrans, L.P.
Description: § 4(d) Rate Filing: Expired Negotiated Rate Agreements—12/31/2019 to be effective 2/2/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5137.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–398–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: § 4(d) Rate Filing: 010220 Negotiated Rates—Mercuria Energy America, Inc. R–7540–02 to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5139.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–399–000.
Applicants: Equitrans, L.P.
Description: § 4(d) Rate Filing: Negotiated Capacity Release Agreements—1/1/2020 to be effective 12/31/9998.
Filed Date: 1/2/20.
Accession Number: 20200102–5276.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–400–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Cap Rel Neg Rate Agmts (Atlanta Gas 8438 releases eff 1–1–2020) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5279.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–401–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Cap Rel Neg Rate Agmts (Aethon 37657, 50488 to Scona 52024, 52023) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5282.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–402–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Cap Rel Neg Rate Agmt (Calyx 51780 to BP 51921) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5291.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–403–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Cap Rel Neg Rate Agmt (Constellation 51978 to Exelon 52033) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5286.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–404–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Cap Rel Neg Rate Agmt (Panda 624 to NextEra 51920) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5287.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–405–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Amendment to Neg Rate Agmt (Clearwater 51774) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5242.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–406–000.
Applicants: Gulf South Pipeline Company, LLC.
Description: § 4(d) Rate Filing: Cap Rel Neg Rate Agmts (Osaka 46429 to ConocoPhillips 52017, Texla 52027) to be effective 1/1/2020.
Filed Date: 1/2/20.
Accession Number: 20200102–5249.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–407–000.
Applicants: Enable Mississippi River Transmission, LLC.
Description: § 4(d) Rate Filing: Negotiated Rate Filing—CES RP18–923 & RP20–131 Settlement to be effective 1/1/2019.
Filed Date: 1/2/20.
Accession Number: 20200102–5295.
Comments Due: 5 p.m. ET 1/14/20.

Docket Numbers: RP20–408–000.
Applicants: Equitrans, L.P.
Description: § 4(d) Rate Filing: Revised—Negotiated Capacity Release Agreements—1/1/2020 to be effective 1/1/2020.
Filed Date: 1/3/20.
Accession Number: 20200103–5000.
Comments Due: 5 p.m. ET 1/15/20.

Docket Numbers: RP20–409–000.
Applicants: Enable Mississippi River Transmission, LLC.
Description: § 4(d) Rate Filing: Negotiated Rate Filing—Mississippi Lime RP18–923 & RP20–131 Settlement to be effective 1/1/2019.
Filed Date: 1/3/20.

Accession Number: 20200103–5001.
Comments Due: 5 p.m. ET 1/15/20.

Docket Numbers: RP20–410–000.
Applicants: Texas Eastern Transmission, LP.
Description: § 4(d) Rate Filing: Name Change Cleanup Filing—Toshiba to Total to be effective 2/3/2020.
Filed Date: 1/3/20.
Accession Number: 20200103–5008.
Comments Due: 5 p.m. ET 1/15/20.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified date(s). Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: January 6, 2020.

Kimberly D. Bose,

Secretary.

[FR Doc. 2020–00221 Filed 1–9–20; 8:45 am]

BILLING CODE 6717–01–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9048–8]

Environmental Impact Statements; Notice of Availability

Weekly receipt of Environmental Impact Statements filed December 30, 2019, 10 a.m. EST Through January 6, 2020, 10 a.m. EST, pursuant to 40 CFR 1506.9.

Responsible Agency: Office of Federal Activities, General Information 202–564–5632 or *https://www.epa.gov/nepa/.*

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search.*

EIS No. 20200004, Final, BLM, CO, Domestic Sheep Grazing Permit Renewals, Review Period Ends: 02/10/2020, *Contact:* Kristi Murphy 970–642–4955

EIS No. 20200005, Final, USN, NV, Fallon Range Training Complex Modernization, Review Period Ends: 02/10/2020, *Contact:* Sara Goodwin 619–532–4463

Amended Notice

EIS No. 20190274, Revised Draft, BIA, OK, Osage County Oil and Gas Draft Environmental Impact Statement, *Comment Period Ends:* 02/21/2020, *Contact:* Mosby Halterman 918–781–4660. Revision to FR Notice Published 12/20/2019; Correcting the Document Type from Draft to Revised Draft and Extending the Comment Period from 1/22/2020 to 2/21/2020.

Dated: January 6, 2020.

Robert Tomiak,

Director, Office of Federal Activities.

[FR Doc. 2020–00216 Filed 1–9–20; 8:45 am]

BILLING CODE 6560–50–P

EXPORT-IMPORT BANK

Notice of Open Meeting of the Advisory Committee of the Export-Import Bank of the United States (EXIM)

Time and Date: Tuesday, January 21, 2020 from 9:00 a.m. until 2:00 p.m. EST.

Place: 811 Vermont Avenue NW, Room 1126, Washington, DC 20571.

Agenda: Discussion of EXIM policies and programs and comments for inclusion in EXIM's Report to the U.S. Congress on Global Export Credit Competition.

Public Participation: The meeting will be open to public participation, and time will be allotted for oral questions or comments. Members of the public may also file written statement(s) before or after the meeting. If you plan to attend, a photo ID must be presented at the guard's desk as part of the clearance process into the building, you may email *external@exim.gov* to be placed on an attendee list. If any person wishes auxiliary aids, such as a sign language interpreter, or other special accommodations, please email *external@exim.gov* no later than 5:00 p.m. EST on Thursday, January 16, 2020.

Members of the Press: For members of the press planning to attend the meeting, a photo ID must be presented at the guard's desk as part of the clearance process into the building. Please email *external@exim.gov* to be placed on an attendee list.

For Further Information Contact: For further information, contact the Office of External Engagement at *external@exim.gov.*

Joyce Stone,

Program Specialist, Office of the General Counsel.

[FR Doc. 2020–00248 Filed 1–9–20; 8:45 am]

BILLING CODE 6690–01–P

EXPORT-IMPORT BANK

Notice of Open Meeting of the Sub-Saharan Africa Advisory Committee of the Export-Import Bank of the United States (EXIM)

Time and Date: Tuesday, February 11, 2019 from 9:00 a.m. until 12:30 p.m. EST.

Place: 811 Vermont Avenue NW, Room 1125B, Washington, DC 20571.

Agenda: Discussion of EXIM Bank policies and programs designed to support the expansion of financing support for U.S. manufactured goods and services in Sub-Saharan Africa.

Public Participation: The meeting will be open to public participation, and time will be allotted for oral questions or comments. Members of the public may also file written statement(s) before or after the meeting. If you plan to attend, a photo ID must be presented at the guard's desk as part of the clearance process into the building, you may email *external@exim.gov* to be placed on an attendee list. If any person wishes auxiliary aids, such as a sign language interpreter, or other special accommodations, please email *external@exim.gov* no later than 5:00 p.m. EST on Thursday, February 6, 2020.

Members of the Press: For members of the press planning to attend the meeting, a photo ID must be presented at the guard's desk as part of the clearance process into the building. Please email *external@exim.gov* to be placed on the attendee list.

Further Information: For further information, contact the Office of External Engagement at *external@exim.gov.*

Joyce Stone,

Program Specialist, Office of the General Counsel.

[FR Doc. 2020–00249 Filed 1–9–20; 8:45 am]

BILLING CODE 6690–01–P

FEDERAL MARITIME COMMISSION

Sunshine Act Meeting

TIME AND DATE: January 15, 2020; 10:00 a.m.

PLACE: 800 N Capitol Street NW, First Floor Hearing Room, Washington, DC.

STATUS: Parts of this meeting will be open to the public and will be streamed live at *https://bit.ly/2IZBIkY.* The rest of the meeting will be closed to the public.

MATTERS TO BE CONSIDERED:

Open Session

1. Hearing Procedures Governing the Denial, Revocation, or Suspension of an OTI License
2. Regulatory Amendments Implementing the Frank LoBiondo Coast Guard Authorization Act of 2018

Closed Session

1. Staff Briefing on Economic Outlook and U.S. Liner Trade Developments

CONTACT PERSON FOR MORE INFORMATION: Rachel Dickon, Secretary, (202) 523–5725.

Rachel Dickon,

Secretary.

[FR Doc. 2020–00311 Filed 1–8–20; 4:15 pm]

BILLING CODE 6731–AA–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

Research Project To Evaluate and Control Hazards to Landscaping and Grounds Management Workers; Request for Participants

AGENCY: National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention, (CDC), Department of Health and Human Services (HHS).

ACTION: Request for pilot study participants.

SUMMARY: The National Institute for Occupational Safety and Health (NIOSH), within the Centers for Disease Control and Prevention (CDC), is initiating a research study to evaluate workplace hazards to landscapers, groundskeepers, hardscapers and arborists and to develop appropriate controls to minimize or eliminate those hazards. NIOSH is seeking up to nine firms in the landscaping and grounds management fields to participate in the pilot study that will evaluate how outdoor power tools can create hazards that may result in occupational health impacts. NIOSH will use this information to design effective solutions, such as engineering controls for power tools. The findings and controls information will be shared with participating workers and companies.

DATES: Submit letters of interest to participate in this research program prior to October 16, 2020.

ADDRESSES: Interested employers and/or workers should submit a letter of interest with information about their work activities and location to: NIOSH, Division of Field Studies and Engineering, Attn: Barbara Alexander, 1090 Tusculum Ave., MS R–5, Cincinnati, Ohio 45226, Email address: *balexander@cdc.gov*.

FOR FURTHER INFORMATION CONTACT: Barbara Alexander, 1090 Tusculum Ave., MS R–5, Cincinnati, Ohio 45226, Phone: 513–841–4581, Email address: *balexander@cdc.gov.*

SUPPLEMENTARY INFORMATION: The landscaping industry is composed primarily of small companies and is one of the most hazardous industries in the services sector with a fatality rate of 16.9 per 100,000 workers, compared to 3.5 per 100,000 workers for all industries in 2017.[1] The rate of non-fatal injuries in landscaping is also elevated.[2] Previous research conducted by NIOSH has shown that workers completing tasks similar to those performed by landscapers, groundskeepers, arborists, and hardscapers are exposed to hazardous levels of noise, carbon monoxide (CO), dust, and silica.[3] For example, similar processes and tasks in the construction industry produce exposures that are well-characterized; substitutions and engineering controls appropriate to reducing these exposures are known and their effectiveness has been demonstrated.[4] Previous NIOSH research has led to safer operations through interventions such as the design and development of dust controls on asphalt milling machines;[5] the development of reduced noise equipment for the ''NIOSH Buy Quiet'' initiative;[6] and the development of a website, *www.silica-safe.org,* which addresses silica hazards and controls in the construction industry. The data available for landscapers, hardscapers, arborists, and groundskeepers indicate that their burden of occupational exposure, illness and injury is potentially great.

The study will consist of two parts. In the first part of the study, NIOSH will conduct site visits at work locations in accordance with the requirements of NIOSH regulations in 42 CFR part 85a. NIOSH investigators will collect data through small sampling devices that workers will wear while conducting normal working activities. This information will establish a baseline for exposures to potential hazards from the use of outdoor power equipment. In the second part of the study, NIOSH will test worker exposures while using tools which are designed to reduce exposures to noise, CO, dust, and silica. The reduced-exposure tools will be provided by NIOSH through the employer, and training in their correct use will be provided. The study is a unique opportunity to try new equipment on the market with low-emission and low-noise properties.

This pilot project will add to our understanding of hazards in this industry and will promote the implementation of effective controls. Participants selected for the study will receive a site visit report for their particular site, workers, and processes, as well as a consolidated report of overall findings and recommendations. A research report from this study will be prepared and made publicly available at the end of the research. Company and participant names will not be included in the report.

Frank J. Hearl,

Chief of Staff, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.

[FR Doc. 2020–00246 Filed 1–9–20; 8:45 am]

BILLING CODE 4163–18–P

[1] Census of Fatal Occupational Injuries (CFOI), Bureau of Labor Statistics, U. S. Department of Labor, *https://www.bls.gov/iif/oshcfoi1.htm#other.*

[2] Incidence rates of nonfatal occupational injuries and illnesses by industry and case types, 2018, Bureau of Labor Statistics, U.S. Department of Labor, *https://www.bls.gov/iif/oshwc/osh/os/summ1_00_2018.htm.*

[3] NIOSH [2019]. Evaluation of wildland fire fighter exposures during fuel reduction projects. By Ramsey JG, Eisenberg J, Wiegand D, Brueck SE, McDowell TW. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Health Hazard Evaluation Report 2015–0028–3330, *https://www.cdc.gov/niosh/hhe/reports/pdfs/2015-0028-3330.pdf.*

[4] NIOSH [2007]. In-depth survey of dust control technology for cutting concrete block and tuckpointing brick, EPHB 282–13 Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, *https://www.cdc.gov/niosh/surveyreports/pdfs/282-13.pdf.*

[5] NIOSH [2015]. Best practice engineering control guidelines to control worker exposure to respirable crystalline silica during asphalt pavement milling. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2015–105 (accessed 1/9/2018).

[6] *https://www.cdc.gov/niosh/topics/buyquiet/default.html.*

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

Disease, Disability, and Injury Prevention and Control Special Emphasis Panel (SEP)—RFA–IP20–003, Network of Modeling Centers To Improve Evidence Base for Seasonal and Pandemic Influenza Prevention and Control; Amended Notice of Meeting

Notice is hereby given of a change in the meeting of the Disease, Disability, and Injury Prevention and Control Special Emphasis Panel (SEP)—RFA–IP20–003, Network of Modeling Centers to Improve Evidence Base for Seasonal and Pandemic Influenza Prevention and Control; February 25–26, 2020, 10:00 a.m.–5:00 p.m., (EDT).

Teleconference, Centers for Disease Control and Prevention, Room 1080, 8 Corporate Square Boulevard, Atlanta, GA 30329–4027 which was published in the **Federal Register** on November 25, 2019, Volume 84, Number 227, page 64897.

The meeting is being amended to change the meeting date to February 25, 2020. The meeting is closed to the public.

FOR FURTHER INFORMATION CONTACT: Gregory Anderson, M.S., M.P.H., Scientific Review Officer, CDC, 1600 Clifton Road NE, Mailstop US8–1, Atlanta, Georgia 30329–4027; (404) 718–8833; *gca5@cdc.gov.*

The Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention, has been delegated the authority to sign **Federal Register** notices pertaining to announcements of meetings and other committee management activities, for both the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

Kalwant Smagh,

Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention.

[FR Doc. 2020–00255 Filed 1–9–20; 8:45 am]

BILLING CODE 4163–18–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended, notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended, and the Determination of the Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, CDC, pursuant to Public Law 92–463. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: Disease, Disability, and Injury Prevention and Control Special Emphasis Panel (SEP)-DP20–001, Assessing the Burden of Diabetes By Type in Children, Adolescents and Young Adults (DiCAYA).

Date: March 11, 2020.

Time: 10:00 a.m.–6:00 p.m., EDT.

Place: Teleconference.

Agenda: To review and evaluate grant applications.

For Further Information Contact: Jaya Raman Ph.D., Scientific Review Officer, CDC, 4770 Buford Highway, Mailstop F80, Atlanta, Georgia 30341; Telephone: (770) 488–6511; Email: *kva5@cdc.gov.*

The Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention, has been delegated the authority to sign **Federal Register** notices pertaining to announcements of meetings and other committee management activities, for both the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

Kalwant Smagh,

Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention.

[FR Doc. 2020–00256 Filed 1–9–20; 8:45 am]

BILLING CODE 4163–18–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[Docket No. CDC–2020–0002]

Advisory Committee on Immunization Practices (ACIP); Notice of Meeting and Request for Comment

AGENCY: Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS).

ACTION: Notice of meeting.

SUMMARY: In accordance with the Federal Advisory Committee Act, the Centers for Disease Control and Prevention (CDC), announces the following meeting of the Advisory Committee on Immunization Practices (ACIP). This meeting is open to the public, limited only by room seating. The meeting room accommodates 216 for public seating. Room 245, adjacent to the meeting room, will be available once the meeting room reaches capacity, providing up to 18 additional seats. Time will be available for public comment. The meeting will be webcast live via the World Wide Web; for meeting registration and more information on ACIP please visit the ACIP website: *http://www.cdc.gov/vaccines/acip/index.html.*

DATES: The meeting will be held on February 26, 2020, 8:00 a.m. to 5:00 p.m., EST, and February 27, 2020, 8:00 a.m. to 2:30 p.m. EST.

Written comments must be received on or before February 28, 2020.

ADDRESSES: You may submit comments, identified by Docket No. CDC–2020–0002 by any of the following methods:

- *Federal eRulemaking Portal: https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Mail:* Centers for Disease Control and Prevention, 1600 Clifton Road NE, MS A–27, Atlanta, GA 30329–4027, Attn: February ACIP Meeting.

Instructions: All submissions received must include the Agency name and Docket Number. All relevant comments received in conformance with the *https://www.regulations.gov* suitability policy will be posted without change to *https://www.regulations.gov,* including any personal information provided. For access to the docket to read background documents or comments received, go to *https://www.regulations.gov.* Written public comments submitted by 72 hours prior to the ACIP meeting will be provided to ACIP members before the meeting.

Meeting location: Centers for Disease Control and Prevention, 1600 Clifton

Road NE, Tom Harkin Global Communications Center, Building 19, Kent 'Oz' Nelson Auditorium, Atlanta, Georgia, 30329–4027.

FOR FURTHER INFORMATION CONTACT: Stephanie Thomas, ACIP Committee Management Specialist, Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases, 1600 Clifton Road NE, Atlanta, GA 30329–4027; Telephone: 404–639–8367; Email: *ACIP@cdc.gov.*

SUPPLEMENTARY INFORMATION:

Purpose: The committee is charged with advising the Director, CDC, on the use of immunizing agents. In addition, under 42 U.S.C. 1396s, the committee is mandated to establish and periodically review and, as appropriate, revise the list of vaccines for administration to vaccine-eligible children through the Vaccines for Children (VFC) program, along with schedules regarding dosing interval, dosage, and contraindications to administration of vaccines. Further, under provisions of the Affordable Care Act, section 2713 of the Public Health Service Act, immunization recommendations of the ACIP that have been approved by the Director of the Centers for Disease Control and Prevention and appear on CDC immunization schedules must be covered by applicable health plans.

Public Participation

Interested persons or organizations are invited to participate by submitting written views, recommendations, and data. Please note that comments received, including attachments and other supporting materials, are part of the public record and are subject to public disclosure. Comments will be posted on *https://www.regulations.gov.* Therefore, do not include any information in your comment or supporting materials that you consider confidential or inappropriate for public disclosure. If you include your name, contact information, or other information that identifies you in the body of your comments, that information will be on public display. CDC will review all submissions and may choose to redact, or withhold, submissions containing private or proprietary information such as Social Security numbers, medical information, inappropriate language, or duplicate/near duplicate examples of a mass-mail campaign. CDC will carefully consider all comments submitted in to the docket.

Oral Public Comment: This meeting will include time for members of the public to make an in-person oral comment. Oral public comment will occur before any scheduled votes including all votes relevant to the ACIP's Affordable Care Act and Vaccines for Children Program roles. Priority will be given to individuals who submit a request to make an oral public comment before the meeting according to the procedures below. On-site, in-person registration for oral public comment at the meeting will only be available if there is time remaining in the oral public comment session after all individuals who submitted a request to make an oral comment before the meeting have had an opportunity to speak. There is no guarantee there will be an opportunity for on-site, in-person registration for oral public comment, and all individuals interested in requesting to make an oral public comment are strongly encouraged to submit a request according to the instructions below.

Procedure for Oral Public Comment: All persons interested in making an oral public comment at the February ACIP meeting must submit a request at *https://www.cdc.gov/vaccines/acip/meetings/* no later than 11:59 p.m., EST, February 10, 2020 according to the instructions provided.

If the number of persons requesting to speak is greater than can be reasonably accommodated during the scheduled time, CDC will conduct a lottery to determine the speakers for each scheduled public comment session. CDC staff will notify individuals regarding their request to speak by email by February 13, 2020. To accommodate the significant interest in participation in the oral public comment session of ACIP meetings, each speaker will be limited to 3 minutes, and each speaker may only speak once per meeting.

Written Public Comment: Written comments must be received on or before February 28, 2020.

Matters to be Considered: The agenda will include discussions on influenza vaccines, general best practices, dengue vaccine, rabies vaccine, Ebola vaccine, meningococcal vaccines, orthopoxviruses, and hepatitis B vaccine. A recommendation vote is scheduled for Ebola vaccine. Agenda items are subject to change as priorities dictate. For more information on the meeting agenda visit *https://www.cdc.gov/vaccines/acip/meetings/meetings-info.html.*

The Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention, has been delegated the authority to sign **Federal Register** notices pertaining to announcements of meetings and other committee management activities, for both the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

Kalwant Smagh,

Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention.

[FR Doc. 2020–00254 Filed 1–9–20; 8:45 am]

BILLING CODE 4163–18–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended, notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended, and the Determination of the Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, CDC, pursuant to Public Law 92–463. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: Disease, Disability, and Injury Prevention and Control Special Emphasis Panel (SEP)–DP20–002, Natural Experiments of the Impact of Population-targeted Policies to Prevent Type 2 Diabetes and Diabetes Complications.

Date: April 7–9, 2020.

Time: 10:00 a.m.–6:00 p.m., EDT.

Place: Teleconference.

Agenda: To review and evaluate grant applications.

For Further Information Contact: Jaya Raman Ph.D., Scientific Review Officer, CDC, 4770 Buford Highway, Mailstop F80, Atlanta, Georgia 30341; Telephone: (770) 488–6511; Email: *kva5@cdc.gov.*

The Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention, has been delegated the authority to sign **Federal Register** notices pertaining to announcements of meetings and other committee management activities, for both the Centers for Disease Control and

Prevention and the Agency for Toxic Substances and Disease Registry.

Kalwant Smagh,

Director, Strategic Business Initiatives Unit, Office of the Chief Operating Officer, Centers for Disease Control and Prevention.

[FR Doc. 2020–00257 Filed 1–9–20; 8:45 am]

BILLING CODE 4163–18–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

[Docket No. FDA–2020–N–0025]

Testing Methods for Asbestos in Talc and Cosmetic Products Containing Talc; Public Meeting; Request for Comments

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice of public meeting; request for comments.

SUMMARY: The Food and Drug Administration (FDA or we) is announcing a public meeting entitled ''Testing Methods for Asbestos in Talc and Cosmetic Products Containing Talc.'' The purpose of the public meeting is to discuss and obtain scientific information on topics related to testing methodologies, terminology, and criteria that can be applied to characterize and measure asbestos and other potentially harmful elongate mineral particles (EMPs) that may be present as contaminants in talc and cosmetic products manufactured using talc as an ingredient.

DATES: The public meeting will be held on February 4, 2020, from 8:30 a.m. to 5 p.m. Eastern Time, or until after the last public commenter has spoken, whichever occurs first. Submit requests to make oral presentations and comments at the public meeting by January 17, 2020. Electronic or written comments on this meeting will be accepted until March 4, 2020. See the **SUPPLEMENTARY INFORMATION** section of this document for information about early registration, requesting special accommodations due to disability, and other information regarding meeting participation.

ADDRESSES: The public meeting will be held at the Food and Drug Administration, White Oak Campus, 10903 New Hampshire Ave., Building 31 Conference Center, The Great Room (Rm. 1503), Silver Spring, MD 20993. Entrance for the public meeting participants (non-FDA employees) is through Building 1, where routine security check procedures will be performed. For parking and security information, please refer to *https://www.fda.gov/AboutFDA/WorkingatFDA/BuildingsandFacilities/WhiteOakCampusInformation/ucm241740.htm*.

FDA is establishing a docket for public comment on this meeting. The docket number is FDA–2020–N–0025. The docket will close on March 4, 2020. Submit either electronic or written comments on or before March 4, 2020. The electronic filing system will accept comments until 11:59 p.m. Eastern Time at the end of March 4, 2020. Comments received by mail/hand delivery/courier (for written/paper submissions) will be considered timely if they are postmarked or the delivery service acceptance receipt is on or before that date. Please note that late, untimely filed comments will not be considered.

Electronic Submissions

Submit electronic comments in the following way:

- *Federal eRulemaking Portal: https://www.regulations.gov*. Follow the instructions for submitting comments. Comments submitted electronically, including attachments, to *https://www.regulations.gov* will be posted to the docket unchanged. Because your comment will be made public, you are solely responsible for ensuring that your comment does not include any confidential information that you or a third party may not wish to be posted, such as medical information, your or anyone else's Social Security number, or confidential business information, such as a manufacturing process. Please note that if you include your name, contact information, or other information that identifies you in the body of your comments, that information will be posted on *https://www.regulations.gov*.
- If you want to submit a comment with confidential information that you do not wish to be made available to the public, submit the comment as a written/paper submission and in the manner detailed below (see ''Written/Paper Submissions'' and ''Instructions'').

Written/Paper Submissions

Submit written/paper submissions as follows:

- *Mail/Hand Delivery/Courier (for written/paper submissions):* Dockets Management Staff (HFA–305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852.
- For written/paper comments submitted to the Dockets Management Staff, FDA will post your comment, as well as any attachments, except for information submitted, marked and identified, as confidential, if submitted as detailed in ''Instructions.''

Instructions: All submissions received must include the Docket No. FDA–2020–N–0025 for ''Testing Methods for Asbestos in Talc and Cosmetic Products Containing Talc.'' Received comments, those filed in a timely manner (see **ADDRESSES**), will be placed in the docket and, except for those submitted as ''Confidential Submissions,'' publicly viewable at *https://www.regulations.gov* or at the Dockets Management Staff between 9 a.m. and 4 p.m., Monday through Friday.

- Confidential Submissions—To submit a comment with confidential information that you do not wish to be made publicly available, submit your comments only as a written/paper submission. You should submit two copies total. One copy will include the information you claim to be confidential with a heading or cover note that states ''THIS DOCUMENT CONTAINS CONFIDENTIAL INFORMATION.'' We will review this copy, including the claimed confidential information, in our consideration of comments. The second copy, which will have the claimed confidential information redacted/blacked out, will be available for public viewing and posted on *https://www.regulations.gov*. Submit both copies to the Dockets Management Staff. If you do not wish your name and contact information to be made publicly available, you can provide this information on the cover sheet and not in the body of your comments and you must identify this information as ''confidential.'' Any information marked as ''confidential'' will not be disclosed except in accordance with 21 CFR 10.20 and other applicable disclosure law. For more information about FDA's posting of comments to public dockets, see 80 FR 56469, September 18, 2015, or access the information at: *https://www.govinfo.gov/content/pkg/FR-2015-09-18/pdf/2015-23389.pdf*.

Docket: For access to the docket to read background documents or the electronic and written/paper comments received, go to *https://www.regulations.gov* and insert the docket number, found in brackets in the heading of this document, into the ''Search'' box and follow the prompts and/or go to the Dockets Management Staff, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852.

FOR FURTHER INFORMATION CONTACT: Denise Hodge, Food and Drug Administration, Center for Food Safety and Applied Nutrition, 5001 Campus Dr. (HFS–125), College Park, MD 20740,

301–796–7739, email: *TalcMeeting@fda.hhs.gov*.

SUPPLEMENTARY INFORMATION:

I. Background

Talc is used in a wide variety of consumer products, including cosmetics. Talc is mined as a naturally occurring hydrous magnesium silicate and may be contaminated with asbestos fibers due to the proximity of asbestos to talc deposits. Asbestos is a known human carcinogen, and its health risks are well documented. Inhalation of asbestos is a safety concern because it can cause the formation of scar-like tissue in the lung, resulting in asbestosis, or it may lead to the development of lung cancers and malignant mesothelioma.

In 1976, the cosmetics industry implemented voluntary asbestos testing of talc raw materials using the Cosmetic, Toiletry, and Fragrance Association (CTFA) J4–1 (Ref. 1) method in response to test results indicating asbestos to be present. Talc suppliers to the pharmaceutical industry use a similar method to certify that talc meets the United States Pharmacopeia's (USP's) requirement for ''Absence of Asbestos'' (Ref. 2). To date, both methods, which rely on the use of x ray diffraction (XRD) or infrared (IR) spectroscopy followed by polarized light microscopy (PLM) only if XRD or IR is positive for amphibole or serpentine minerals in talc, remain standard test methods despite long-recognized shortcomings in specificity and sensitivity compared with electron microscopy-based methods. In 2010, FDA asked the USP to consider revising the current tests for asbestos in talc to ensure adequate specificity, and, in 2014, the Talc USP expert panel recommended an update of the Talc USP monograph to require an electron microscopy method for the measurement of asbestos in talc (Refs. 3 and 4). Recent testing of cosmetics by private laboratories [1] using transmission electron microscopy (TEM) has revealed the presence of asbestos fibers in samples that had negative findings for the same products using polarized light microscopy, thus highlighting the shortcomings of optical microscopy methods.

FDA monitors for asbestos in talc-containing cosmetic products, including directing its sampling of products toward confirming reports from various laboratories that have reported asbestos using electron microscopy. For example, in 2010, shortly after reports of asbestos contaminated talc-containing products in Asia, FDA surveyed 34 cosmetic products,[2] including body powders, face powders, foundation, eye shadow, blush, and samples from four major talc suppliers and found no asbestos contamination using the most sensitive techniques available. FDA's survey was limited in scope but served to provide data from testing using TEM, currently regarded by many experts as the most reliable technique for detecting asbestos fibers (see Ref. 4). In July 2017, FDA began investigating reports of asbestos contamination of cosmetic products that contained talc, presumably originating from talc that was used as an ingredient in the cosmetic products. In 2019, FDA surveyed 50 talc-containing cosmetic products. In March, June, August, and October 2019, FDA confirmed the presence of chrysotile and/or tremolite asbestos in several cosmetic products, which were voluntarily recalled by the companies. The use of TEM was critical in detecting asbestos in these cosmetic products.

Even when using the most sensitive electron microscopy methods, laboratories testing the same product may reach different conclusions about the presence of asbestos. These differences may be attributed to a lack of a uniform standard for testing which provides unambiguous guidelines for identifying and counting asbestos fibers. Thus, at FDA's request, on November 28, 2018, the Joint Institute for Food Safety and Applied Nutrition (JIFSAN) convened an ''Asbestos in Talc'' symposium to provide a forum for experts in asbestos mineral analysis, academicians, and government officials to share knowledge and experience.[3] The discussions focused on the toolbox of available testing methods for analysis of asbestos in talc and talc-containing cosmetic products, criteria used for asbestos fiber identification and counting in current published methods, and how analytical microscopy data might be interpreted in making decisions about the suitability of cosmetic products found to contain asbestos and other potentially harmful mineral particles.

During the fall of 2018, FDA formed an interagency working group on asbestos in consumer products (IWGACP). The IWGACP consists of 38 subject matter experts from the following U.S. federal agencies: FDA, National Institute for Occupational Safety and Health (NIOSH), National Institutes of Health/National Institute of Environmental Health Sciences, Occupational Safety and Health Administration, Environmental Protection Agency, Consumer Product Safety Commission, National Institute of Standards and Technology, and Department of Interior's U.S. Geological Survey. The IWGACP was asked to support the development of standardized testing methods for asbestos and other mineral particles of concern that could potentially affect consumer product safety. The IWGACP was tasked to address terminology and definitions of asbestos and other EMPs of health concern in talc and talc-containing consumer products, recommend methodological improvements for measuring asbestos in talc and talc-containing consumer products, and recommend laboratory reporting standards for testing talc and talc-containing consumer products. The IWGACP is also addressing issues regarding asbestos contamination in talc-containing cosmetic products, the presumptive source of asbestos, as well as scientific and technical information shared at the JIFSAN Symposium and how that information could be used by different government agencies. The IWGACP is comprised of three subgroups formed to address the following topics: (1) Terminology and definitions of asbestos and other EMPs of health concern in talc; (2) development of a robust analytical protocol for detecting asbestos and other EMPs of health concern in talc and consumer products containing talc; and (3) data reporting and analysis.

II. Purpose of the Public Meeting

FDA is interested in obtaining information to further the development of standardized testing methods to improve sensitivity, consistency, and inter-laboratory concurrence of asbestos testing of talc used in cosmetic products and of talc-containing cosmetic products. Toward this end, at the public meeting, IWGACP members will present preliminary recommendations (summarized in section IV.C) on testing methods, including criteria to be used for asbestos fiber identification and counting. We will also seek additional information on these topics at the meeting. We do not intend for this meeting to produce any decisions or new positions on specific regulatory questions. However, we expect this meeting to be an important step in our continued efforts to gather information, including data to improve the consistency in terminology, analytical protocols, and data reporting for

[1] See AMA testing results at FDA's Investigation of Reports of Asbestos Contamination in Cosmetics 2017–2019 tab at *https://www.fda.gov/cosmetics/cosmetic-ingredients/talc*.

[2] *https://www.fda.gov/cosmetics/cosmetic-ingredients/talc*.

[3] *https://jifsan.umd.edu/events/2018-asbestos-in-talc-symposium*.

asbestos and other potentially harmful mineral particles that may be present as contaminants in talc and cosmetic products containing talc and provide information that can be used for future discussions on health effects.

III. Participating in the Public Meeting

Registration: To register to attend the public meeting on ''Testing Methods for Asbestos in Talc and Cosmetic Products Containing Talc,'' either in person or by webcast, please register at *https://www.fda.gov/cosmetics/cosmetics-news-events/meetings-conferences-workshops-cosmetics* by January 28, 2020, at 11:59 p.m. Eastern Time. Please provide complete contact information for each attendee, including name, title, affiliation, and email and whether you want to attend in person or by webcast. The FDA Conference Center at the White Oak location is a Federal facility with security procedures and limited seating. Attendance will be free and based on space and availability. Early registration is recommended because seating is limited; therefore, FDA may limit the number of participants from each organization. Registrants will receive confirmation when they have been accepted for in-person attendance. If time and space permit, onsite registration on the day of the public meeting will be provided beginning at 7:30 a.m. We will inform registrants if registration closes before the day of the public meeting. Persons attending this meeting are advised that FDA is not responsible for providing access to electrical outlets. FDA will make every effort to accommodate persons with physical disabilities or special needs. If you need special accommodations due to a disability, please contact Denise Hodge (see **FOR FURTHER INFORMATION CONTACT**) no later than January 17, 2020.

Requests for Oral Presentations: During online registration you may indicate if you wish to make a formal presentation (with up to five slides) or present oral comments during the public comment session (with no slides), and you may indicate which topic(s) you would like to address. Oral presentations can only be made in person at the meeting. FDA will do its best to accommodate requests to make public presentations. We seek a broad representation of ideas and issues presented at the meeting. We urge individuals and organizations with common interests to consolidate or coordinate their presentations and request time for a joint presentation. Following the close of registration, we will determine the amount of time allotted to each presenter and the approximate time each presentation is to begin and will select and notify participants by January 21, 2020. All requests to make oral presentations must be received by January 17, 2020, 11:59 p.m. Eastern time. Typically, presentations are between 3 and 5 minutes. If selected for a formal oral presentation (with slides), each presenter must submit an electronic copy of their presentation (PowerPoint or PDF) to *TalcMeeting@fda.hhs.gov* on or before January 28, 2020. Those who are not giving electronic presentations are encouraged to submit a single slide (PowerPoint or PDF) with their name, affiliation, and topic. No commercial or promotional material will be permitted to be presented or distributed at the public meeting. Persons notified that they will be presenters are encouraged to arrive early and check in at the onsite registration table to confirm their designated presentation times. Actual presentation times may vary based on how the meeting progresses in real time. An agenda for the public meeting and any other background materials will be made available at least 5 days before the meeting at *https://www.fda.gov/cosmetics/cosmetics-news-events/meetings-conferences-workshops-cosmetics*. Those without internet or email access can register and/or request to participate by contacting Denise Hodge (see **FOR FURTHER INFORMATION CONTACT**) no later than January 17, 2020.

Transcripts: A transcript of the public meeting will be made available as soon as feasible. It will be accessible at *www.regulations.gov* and *https://www.fda.gov/cosmetics/cosmetics-news-events/meetings-conferences-workshops-cosmetics*. It may be viewed at the Dockets Management Staff (see **ADDRESSES**). A transcript will also be made available in either hardcopy or on CD–ROM, in response to a Freedom of Information Act request. A Freedom of Information Act request may be submitted by visiting *https://www.accessdata.fda.gov/scripts/foi/foirequest/requestform.cfm* or by submitting an email request to *FDAFOIA@fda.hhs.gov*.

IV. Issues for Consideration and Request for Information

We encourage public comments and presentations at the public meeting. In submitting information to the docket, please provide available references for the information.

A. Testing Methodologies and Criteria

As previously discussed, laboratories may reach different conclusions as to whether asbestos and other potentially harmful EMPs are present when testing consumer products. We are seeking scientific information on the following topics related to testing methodologies and criteria that can be applied to characterize and measure asbestos and other potentially harmful EMPs present as contaminants in talc and cosmetic products manufactured using talc as an ingredient. We invite comments on the following:

1. The sensitivity of PLM as a test method, including whether the test method can lead to a false negative result for asbestos particles.
2. The sensitivity of TEM as a test method, including the ability of the test method to identify asbestos particles in comparison to PLM.
3. Criteria for identification of the specified asbestos minerals, noting that different minerals with the same chemical composition can exist in samples.

B. Research Needs To Promote the Reliability of Analytical Methods

The IWGACP identified the following as areas for directing efforts to promote reliability of the analytical methods for asbestos and other EMPs of health concern in talc and talc-containing consumer products. We invite such information to be presented during the public comment section of the meeting:

1. Validation of analytical methods (XRD, PLM, TEM) specific to talc and cosmetic products containing talc that minimize false positive and false negative results.
2. Research and validation of methods of sampling that maximize sample representativeness and minimize error and false positives and false negatives.
3. Research on methods for sample preparation, in particular treatment (*e.g.,* ''concentration methods'') that improves sensitivity while leaving covered minerals unchanged with respect to identity and dimensions.
4. Development of talc-specific reference standards with known concentrations of specific EMPs that can be used to assess laboratory and analyst proficiency, increase inter-laboratory concurrence in method validation, minimize reporting errors, and potentially provide for improved reliability of quantitative analysis.

C. IWGACP's Preliminary Recommendations

We invite comments related to the following preliminary recommendations from the IWGACP:

1. Adoption of the term EMP as ''*any mineral particle with a minimum aspect ratio of 3:1*'', consistent with how this term is defined in NIOSH Bulletin 62 (Ref. 5).

2. Testing laboratories should report all EMPs having length ≥0.5 micrometers (500 nanometers (nm)).

3. Test methods should specify reportable EMPs identified as amphibole or chrysotile particles as covered minerals.

4. Test methods should include the counting and reporting of covered EMPs as a function of sample mass. In counting, guidelines such as ISO 10312, ''Ambient air—Determination of asbestos fibres—Direct transfer transmission electronic microscopy method'' (Ref. 6), classify primary and secondary structures. Individual fibers in secondary structures can be counted recording the dimensions of each fiber.

5. Use of TEM at nominally 20,000 × magnification, in addition to PLM, to resolve the issues of sensitivity that cause reporting of false negatives for covered EMPs. Use of TEM with energy dispersive x ray spectroscopy and selected area electron diffraction analyses may reliably detect and identify chrysotile and asbestiform and non-asbestiform amphibole minerals, including EMPs whose narrowest width is <200 nm. Scanning electron microscopy might be useful as a complementary method, but has significant shortcomings for identification of chrysotile and visualization of the narrowest particles in the population that can only be overcome by using TEM.

6. ''Mass percent'', a unit that is frequently used to express content of asbestos in commercial bulk materials, is not appropriate for measurement of EMPs in talc and consumer products containing talc because mass percent does not correlate with the number of fibers, and one large fiber could dominate the mass percent value.

V. References

The following references marked with an asterisk (*) are on display at the Dockets Management Staff (see **ADDRESSES**) and are available for viewing by interested persons between 9 a.m. and 4 p.m., Monday through Friday; they also are available electronically at *https://www.regulations.gov*. References without asterisks are not on public display at *https://www.regulations.gov* because they have copyright restriction. Some may be available at the website address, if listed. References without asterisks are available for viewing only at the Dockets Management Staff. FDA has verified the website addresses, as of the date this document publishes in the **Federal Register**, but websites are subject to change over time.

1. The Cosmetic, Toiletry and Fragrance Association, Inc. (CTFA) 1990. Method, J 4–1, ''Asbestiform Amphibole Minerals in Cosmetic Talc'' in Compendium of Cosmetic Ingredient Composition: Specifications Personal Care Products Council, Washington DC (1976) (revised in 1990). See *http://www.asbestosandtalc.com/EMP%20Detection%20Limits%20ASTM/PCPC000960.pdf*.

2. USP, Revision Bulletin, ''Talc,'' dated August 1, 2011, at page 2. See *https://www.usp.org/sites/default/files/usp/document/harmonization/excipients/m80360talc.pdf*.

*3. Woodcock, J. (2010). Letter to Roger L. Williams, CEO of USP (October 12, 2010). See *https://www.usp.org/sites/default/files/usp/document/get-involved/monograph-modernization/2010-10-12-letter-from-dr-janet-woodcock.pdf*.

4. Block L.H., D. Beckers, J. Ferret, G.P. Meeker, et al. (2014). ''Stimuli to the Revision Process, Modernization of Asbestos Testing in USP Talc,'' USP–PF 40(4).

*5. NIOSH 2011. ''Asbestos Fibers and Other Elongate Mineral Particles: State of the Science and Roadmap for Research,'' *Current Intelligence Bulletin 62*. Department of Health and Human Services. Centers for Disease Control and Prevention. National Institute for Occupational Safety and Health. Publication No. 2011–159 (March 2011). *https://www.cdc.gov/niosh/docs/2011-159/pdfs/2011-159.pdf*.

6. International Organization for Standardization, ''ISO 10312:2019(en) Ambient air—Determination of asbestos fibres—Direct transfer transmission electron microscopy method.'' See *https://www.iso.org/obp/ui/#iso:std:iso:10312:ed-2:v1:en*.

Dated: January 7, 2020.

Lowell J. Schiller,

Principal Associate Commissioner for Policy.

[FR Doc. 2020–00259 Filed 1–9–20; 8:45 am]

BILLING CODE 4164–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute of Arthritis and Musculoskeletal and Skin Diseases; Notice of Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended, notice is hereby given of a meeting of the National Arthritis and Musculoskeletal and Skin Diseases Advisory Council.

The meeting will be open to the public as indicated below, with attendance limited to space available. Individuals who plan to attend and need special assistance, such as sign language interpretation or other reasonable accommodations, should notify the Contact Person listed below in advance of the meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Arthritis and Musculoskeletal and Skin Diseases Advisory Council.

Date: February 4, 2020.

Open: 8:30 a.m. to 12:00 p.m.

Agenda: To review program documents and policies.

Place: Porter Neuroscience Research Center, Building 35A, Room: 620/630, 35 Convent Drive, Bethesda, MD 20892.

Closed: 1:00 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Porter Neuroscience Research Center, Building 35A, Room: 620/630, 35 Convent Drive, Bethesda, MD 20892.

Contact Person: Melinda Nelson, Acting Director, Grants Management Branch, National Institute of Arthritis and Musculoskeletal and Skin Diseases, 45 Center Drive, Natcher Building, Room 5A49, Bethesda, MD 20892, (301) 594–3535, *mn23z@nih.gov.*

Any interested person may file written comments with the committee by forwarding the statement to the Contact Person listed on this notice. The statement should include the name, address, telephone number and when applicable, the business or professional affiliation of the interested person.

In the interest of security, NIH has instituted stringent procedures for entrance onto the NIH campus. All visitor vehicles, including taxicabs, hotel, and airport shuttles will be inspected before being allowed on campus. Visitors will be asked to show one form of identification (for example, a government-issued photo ID, driver's license, or passport) and to state the purpose of their visit.

(Catalogue of Federal Domestic Assistance Program Nos. 93.846, Arthritis, Musculoskeletal and Skin Diseases Research, National Institutes of Health, HHS)

Dated: January 6, 2020.

Miguelina Perez,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2020–00192 Filed 1–9–20; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Center for Scientific Review; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended, notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: Musculoskeletal, Oral and Skin Sciences Integrated Review Group; Musculoskeletal Rehabilitation Sciences Study Section.

Date: February 7, 2020.

Time: 8:00 a.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: San Francisco Marriott Fisherman's Wharf, 1250 Columbus Ave., San Francisco, CA 94133.

Contact Person: Maria Nurminskaya, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, Bethesda, MD 20892, (301) 435–1222, *nurminskayam@csr.nih.gov*.

Name of Committee: Infectious Diseases and Microbiology Integrated Review Group; Host Interactions with Bacterial Pathogens Study Section.

Date: February 7, 2020.

Time: 8:00 a.m. to 6:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Hotel Solamar, 435 6th Avenue, San Diego, CA 92101.

Contact Person: Fouad A El-Zaatari, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 3186, MSC 7808, Bethesda, MD 20892, (301) 435–1149, *elzaataf@csr.nih.gov*.

Name of Committee: Center for Scientific Review Special Emphasis Panel; Member Conflict: Healthcare Delivery and Methodologies.

Date: February 7, 2020.

Time: 11:00 a.m. to 1:30 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Rockledge II, 6701 Rockledge Drive, Bethesda, MD 20892 (Telephone Conference Call).

Contact Person: Jacinta Bronte-Tinkew, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 3164, MSC 7770, Bethesda, MD 20892, (301) 806–0009, *brontetinkewjm@csr.nih.gov*.

Name of Committee: Center for Scientific Review Special Emphasis Panel; PAR–19–264: Imaging, Biomarkers and Digital Pathomics for the Early Detection of Premetastatic Aggressive Cancer (R01 Clinical Trial Optional).

Date: February 7, 2020.

Time: 1:00 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Sir Francis Drake Hotel, 450 Powell Street at Sutter, San Francisco, CA 94102.

Contact Person: Xiang-Ning Li, MD, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 5112, MSC 7854, Bethesda, MD 20892, (301) 435–1744, *lixiang@csr.nih.gov*.

(Catalogue of Federal Domestic Assistance Program Nos. 93.306, Comparative Medicine; 93.333, Clinical Research, 93.306, 93.333, 93.337, 93.393–93.396, 93.837–93.844, 93.846–93.878, 93.892, 93.893, National Institutes of Health, HHS)

Dated: January 6, 2020.

Miguelina Perez,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2020–00191 Filed 1–9–20; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute of Diabetes and Digestive and Kidney Diseases; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended, notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Diabetes and Digestive and Kidney Diseases Special Emphasis Panel; R13 Conference Grant Applications.

Date: February 27, 2020.

Time: 11:00 a.m. to 12:30 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Democracy Two, Room 7011, 6707 Democracy Blvd., Bethesda, MD 20892 (Telephone Conference Call).

Contact Person: Jian Yang, Ph.D., Scientific Review Officer, Review Branch, Division of Extramural Activities, NIDDK, National Institutes of Health, Room 7111, 6707 Democracy Boulevard, Bethesda, MD 20892–5452, (301) 594–7799, *yangj@extra.niddk.nih.gov*.

Name of Committee: National Institute of Diabetes and Digestive and Kidney Diseases Special Emphasis Panel; RFA–DK–19–012: Understanding the Functional Contributions and Mechanisms of Type 2 Diabetes Disease-associated Variants (UM1 Clinical Trial Not Allowed).

Date: March 11, 2020.

Time: 12:00 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Democracy Two, 6707 Democracy Blvd., Bethesda, MD 20892 (Telephone Conference Call).

Contact Person: Dianne Camp, Ph.D., Scientific Review Officer, Review Branch, Division of Extramural Activities, NIDDK, National Institutes of Health, Room 7013, 6707 Democracy Boulevard, Bethesda, MD 20892–2542, (301) 5947682, *campd@extra.niddk.nih.gov*.

Name of Committee: National Institute of Diabetes and Digestive and Kidney Diseases Special Emphasis Panel; PAR19–202: NIDDK High Impact Interdisciplinary Science in NIDDK Research Areas (RC2)-Digestive Sciences.

Date: March 13, 2020.

Time: 1:00 p.m. to 4:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Democracy Two, 6707 Democracy Boulevard, Bethesda, MD 20892 (Telephone Conference Call).

Contact Person: Najma S. Begum, Ph.D., Scientific Review Officer, Review Branch, DEA, NIDDK, National Institutes of Health, Room 7349, 6707 Democracy Boulevard, Bethesda, MD 20892–5452, (301) 594–8894, *begumn@niddk.nih.gov*.

(Catalogue of Federal Domestic Assistance Program Nos. 93.847, Diabetes, Endocrinology and Metabolic Research; 93.848, Digestive Diseases and Nutrition Research; 93.849, Kidney Diseases, Urology and Hematology Research, National Institutes of Health, HHS)

Dated: January 6, 2020.

Miguelina Perez,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2020–00193 Filed 1–9–20; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute of Diabetes and Digestive and Kidney Diseases; Amended Notice of Meeting

Notice is hereby given of a change in the meeting of the National Diabetes and Digestive and Kidney Diseases Advisory Council, January 29, 2020, 8:30 a.m. to 4:30 p.m., National Institutes of Health, Building 31, C Wing 6th Floor, 31 Center Drive, Bethesda, MD 20892, which was published in the **Federal Register** on September 12, 2019, 84 FR 48155.

The meeting notice is amended to change the meeting date and location from January 29, 2020, National Institutes of Health, Building 31, C Wing 6th Floor, 31 Center Drive, Bethesda, MD 20892, to January 30, 2020, National Institutes of Health, Natcher Building, Conference Rooms E1 & E2, 45 Center Drive, Bethesda, MD 20892. The meeting is partially Closed to the public.

Dated: January 6, 2020.

Miguelina Perez,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2020–00194 Filed 1–9–20; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–HQ–FAC–2019–N170; FF09F42300 FVWF97920900000 XXX]

Sport Fishing and Boating Partnership Council; Public Meeting by Teleconference

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of teleconference meeting.

SUMMARY: We, the U.S. Fish and Wildlife Service, announce a teleconference meeting of the Sport Fishing and Boating Partnership Council (Council), in accordance with the Federal Advisory Committee Act. The Council's purpose is to advise the Secretary of the Interior, through the Director of the U.S. Fish and Wildlife Service, on aquatic conservation endeavors that benefit recreational resources and recreational boating and that encourage partnerships among industry, the public, and the government. The teleconference meeting is open to the public.

DATES: *Teleconference Meeting:* Tuesday, January 28, 2020, from 2 p.m. to 4 p.m. Eastern Time.

Deadlines: For deadlines for registration, accommodation requests, or comment submission, please see Public Input under **SUPPLEMENTARY INFORMATION.**

FOR FURTHER INFORMATION CONTACT: Linda Friar, Designated Federal Officer, by email at *linda_friar@fws.gov,* by telephone at 703–358–2056, via the Federal Relay Service at 800–877–8339, or by U.S. mail or hand-delivery at the U.S. Fish and Wildlife Service, MS:3C016A, 5275 Leesburg Pike, Falls Church, Virginia 22041.

SUPPLEMENTARY INFORMATION: We, the U.S. Fish and Wildlife Service (Service), announce a teleconference meeting of the Sport Fishing and Boating Partnership Council (Council), in accordance with the Federal Advisory Committee Act (5 U.S.C. Appendix). Established in 1993, the Council advises the Secretary of the Interior, through the Director of the U.S. Fish and Wildlife Service, on aquatic conservation endeavors that benefit recreational resources and recreational boating and that encourage partnerships among industry, the public, and the government.

Meeting Agenda

- General Council business—Approve agenda, review and approve October 2019 meeting minutes, review any pending action items from October 2019 meeting.
- Council Boating Infrastructure—Tier-II ranking panel recommendations and finalize Council recommendations.
- Other Council business:
  —Committee reports, as needed,
  —Vote on Nominations for three Recreational Boating and Fishing Foundation Council representatives, and
  —Agenda items and invitees for March 2019 in-person meeting.
- Public comment and adjourn.

The final agenda and other related meeting information will be posted on the Council's website at *https://www.fws.gov/sfbpc/* by January 21, 2019. Summary minutes of the meeting will be maintained by the Designated Federal Officer and will be available for public inspection within 90 days after the meeting at *https://www.fws.gov/sfbpc/.*

Public Input

If you wish to	You must contact the Council Designated Federal Officer (see **FOR FURTHER INFORMATION CONTACT**) no later than
Listen to the meeting via telephone (listen-only mode)	January 21, 2020.
Request special accommodations	January 17, 2019.
Submit written information before the teleconference for the Council to consider during the teleconference.	January 23, 2020.
Give an oral presentation during the teleconference	January 21, 2020.
Submit a copy of oral statement or expanded statement, or to submit a statement because time constraints prevented presentation during the teleconference.	Up to 30 days after the teleconference date.

Submitting Written Information

Interested members of the public may submit relevant information for the Council to consider during the teleconference. Written statements must be received by the Council Designated Federal Officer no later than the date in Public Input so that the information may be made available to the Council for their consideration prior to the teleconference. Written statements must be supplied to the Council Designated Federal Officer via mail (for signed hard copies) or email (acceptable file formats are Adobe Acrobat PDF, MS Word, MS PowerPoint, or rich text file) (see **FOR FURTHER INFORMATION CONTACT**).

Giving an Oral Presentation

Depending on the number of people who want to comment, the amount of

time available for individual oral comments may be limited. Interested parties should contact the Council Designated Federal Officer, in writing (see **FOR FURTHER INFORMATION CONTACT**), no later than the date in Public Input for placement on the public speaker list. Registered speakers who wish to expand upon their oral statements, or those who wish to speak but can not be accommodated on the agenda, may submit written statements to the Council Designated Federal Officer up to 30 days following the teleconference. Requests to address the Council during the teleconference will be accommodated in the order the requests are received.

Accommodations

The Service is committed to providing access to this teleconference to all participants. Please direct all requests for accommodations to the Council Designated Federal Officer (see **FOR FURTHER INFORMATION CONTACT**) by close of business on the date in Public Input.

Availability of Public Comments

Before including an address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. You can ask us to withhold your personal identifying information from public review, but we cannot guarantee that we will be able to do so.

Authority

Federal Advisory Committee Act (5 U.S.C. Appendix).

Dated: January 2, 2020.

David Hoskins,

Assistant Director, Fish and Aquatic Conservation Program, U.S. Fish and Wildlife Service.

[FR Doc. 2020–00225 Filed 1–9–20; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[18X LLWO600000.L18200000.XP0000]

FY2020 National Call for Nominations for Resource Advisory Councils

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of call for nominations.

SUMMARY: The purpose of this notice is to request public nominations for 27 of the Bureau of Land Management's (BLM) statewide and regional Resource Advisory Councils (RAC) located in the West that have vacant positions and/or members whose terms are scheduled to expire. These RACs provide advice and recommendations to the BLM on land use planning and management of the National System of Public Lands within their geographic areas.

DATES: All nominations must be received no later than February 24, 2020.

ADDRESSES: Nominations and completed applications should be sent to the appropriate BLM offices listed in the **SUPPLEMENTARY INFORMATION** section of this notice.

FOR FURTHER INFORMATION CONTACT: Carrie Richardson, BLM Communications, 1849 C Street NW, Room 5614, Washington, DC 20240, telephone: 202–501–2634, email: *crichardson@blm.gov*. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service (FRS) at 1–800–877–8339 to contact Ms. Richardson during normal business hours. The FRS is available 24 hours a day, 7 days a week, to leave a message or question. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION: The Federal Land Policy and Management Act (FLPMA) directs the Secretary of the Interior to involve the public in planning and issues related to management of lands administered by the BLM. Section 309 of FLPMA (43 U.S.C. 1739) directs the Secretary to establish 10- to 15-member citizen-based advisory councils that are consistent with the Federal Advisory Committee Act (FACA). As required by FACA, RAC membership must be balanced and representative of the various interests concerned with the management of the public lands. The rules governing RACs are found at 43 CFR subpart 1784. The RACs include the following three membership categories:

Category One—Holders of Federal grazing permits or leases within the area for which the RAC is organized; represent interests associated with transportation or rights-of-way; represent developed outdoor recreation, off-highway vehicle users, or commercial recreation activities, including, for example, commercial/charter or recreational fishing; represent the commercial timber industry; or represent energy and mineral development.

Category Two—Representatives of nationally or regionally recognized environmental organizations; dispersed recreational activities, including, for example, hunting and shooting sports; archaeological and historical interests; or nationally or regionally recognized wild horse and burro interest groups.

Category Three—Hold State, county, or local elected office; are employed by a State agency responsible for the management of natural resources, land, or water, including, for example, State/local fire associations; represent Indian tribes within or adjacent to the area for which the RAC is organized; are employed as academicians in natural resource management or the natural sciences; or represent the affected public at large, including, for example, sportsmen and sportswomen communities.

Individuals may nominate themselves or others. Nominees must be residents of the State in which the RAC has jurisdiction. The BLM will evaluate nominees based on their education, training, experience, and knowledge of the geographic area of the RAC. Nominees should demonstrate a commitment to collaborative resource decision-making.

The following must accompany all nominations:

—A completed RAC application, which can either be obtained through your local BLM office or online at: *https://www.blm.gov/sites/blm.gov/files/1120-019_0.pdf*
—Letters of reference from represented interests or organizations; and
—Any other information that addresses the nominee's qualifications.

Simultaneous with this notice, BLM State Offices will issue press releases providing additional information for submitting nominations.

Before including any address, phone number, email address, or other personal identifying information in the application, nominees should be aware this information may be made publicly available at any time. While the nominee can ask to withhold the personal identifying information from public review, the BLM cannot guarantee that it will be able to do so.

Nominations and completed applications for RACs should be sent to the appropriate BLM offices listed below:

Alaska

Alaska RAC

Lesli J. Ellis-Wouters, BLM Alaska State Office, 222 West 7th Street, #13, Anchorage, AK 99513; Phone: 907–271–4418.

Arizona

Arizona RAC

Amber Cargile, BLM Arizona State Office, One North Central Avenue, Suite

800, Phoenix, AZ 85004; Phone: 602–417–9448.

California

Central California RAC

Serena Baker, BLM Mother Lode Field Office, 5152 Hillsdale Circle, El Dorado Hills, CA 95762; Phone: 916–941–3146.

California Desert District Resource Advisory Council

Sarah Webster, BLM California State Office, 2800 Cottage Way, Suite W1623, Sacramento, CA 95825; Phone: 916–978–4622

Northern California RAC

Jeff Fontana, BLM Eagle Lake Field Office, 2550 Riverside Drive, Susanville, CA 96130; Phone: 530–252–5332.

Colorado

Rocky Mountain RAC

Brant Porter, BLM Rocky Mountain District Office, 3028 East Main Street, Cañon City, CO 81212; Phone 719–269–8553.

Northwest RAC

David Boyd, BLM Northwest District Office, 2300 River Frontage Road, Silt, CO 81652; Phone: 970–876–9008.

Southwest RAC

Gloria Tibbetts, BLM Southwest District Office, 2465 South Townsend Avenue, Montrose, CO 81401; Phone 970–240–5430.

Idaho

Boise District RAC

Michael Williamson, BLM Boise District Office, 3948 Development Avenue, Boise, ID 83705; Phone: 208–384–3393.

Coeur d'Alene District RAC

Suzanne Endsley, BLM Coeur d'Alene District Office, 3815 Schreiber Way, Coeur d'Alene, ID 83815; Phone: 208–769–5004.

Idaho Falls District RAC

Sarah Wheeler, BLM Idaho Falls District Office, 1405 Hollipark Drive, Idaho Falls, ID 83401; Phone: 208–524–7550.

Twin Falls District RAC

Heather Tiel-Nelson, BLM Twin Falls District Office, 2878 Addison Avenue East, Twin Falls, ID 83301; Phone: 208–736–2352.

Montana and Dakotas

North Central Montana RAC

Ann Boucher, BLM Montana/Dakotas State Office, 5001 Southgate Drive, Billings, MT 59101; Phone: 406–896–5255.

Dakotas RAC

Mark Jacobsen, BLM Eastern Montana/Dakotas District Office, 111 Garryowen Road, Miles City, MT 59301; Phone: 406–233–2831.

Eastern Montana RAC

Mark Jacobsen, BLM Eastern Montana/Dakotas District Office, 111 Garryowen Road, Miles City, MT 59301; Phone: 406–233–2831.

Western Montana RAC

David Abrams, BLM Western Montana District Office, 106 North Parkmont, Butte, MT 59701; Phone: 406–533–7617.

New Mexico

Las Cruces District RAC

Deborah Stevens, BLM Las Cruces District Office, 1800 Marquess Street, Las Cruces, NM 88005; Phone: 575–525–4421.

Pecos District RAC

Glen Garnand, BLM Pecos District Office, 2909 West Second Street, Roswell, NM 88201; Phone: 575–627–0209.

Nevada

Mojave-Southern Great Basin RAC

Kirsten Cannon, Southern Nevada District Office, 4701 North Torrey Pines Drive, Las Vegas, NV 89130; Phone: 702–515–5057.

Northeastern Great Basin RAC

Kyle Hendrix, Battle Mountain District Office, 50 Bastian Road, Battle Mountain, NV 89820; Phone: 775–635–4054.

Sierra Front Northwestern Great Basin RAC

Lisa Ross, Carson City District Office, 5665 Morgan Mill Road, Carson City, NV 89701; Phone 775–885–6107.

Oregon/Washington

Eastern Washington RAC

Jeff Clark, BLM Spokane District Office, 1103 North Fancher Road, Spokane, WA 99212; Phone: 509–536–1297.

John Day-Snake RAC

Lisa Clark, BLM Prineville District Office, 3050 NE 3rd Street, Prineville, OR 97754; Phone: 541–416–6864.

Northwest Oregon RAC

Jennifer Velez, BLM Northwest Oregon District Office, 1717 Fabry Road SE, Salem, OR 97306; Phone: 541–222–9241.

Southeast Oregon RAC

Larisa Bogardus, BLM Vale District Office, 3100 H Street, Baker City, OR 97814; Phone 541–523–1407.

Southwest Oregon RAC

Christina Breslin, BLM Medford District Office, 3040 Biddle Road, Medford, OR 97504; Phone: 541–618–2371.

Wyoming

Wyoming RAC

Emmet Pruss, BLM Wyoming State Office, 5353 Yellowstone Road, P.O. Box 1828, Cheyenne, WY 82009; Phone: 307–775–6266.

(Authority: 43 CFR 1784.4–1)

Jeff Krauss,

Acting Assistant Director for Communications.

[FR Doc. 2020–00238 Filed 1–9–20; 8:45 am]

BILLING CODE 4310–84–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[18X LLWO600000.L18200000.XP0000]

National Call for Nominations for Site-Specific Advisory Councils

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of call for nominations.

SUMMARY: The purpose of this notice is to request public nominations for three Bureau of Land Management (BLM) citizens' advisory councils affiliated with specific sites on the BLM's National Conservation Lands. The three advisory councils provide advice and recommendations to the BLM on the development and implementation of management plans in accordance with the statutes under which the sites were established.

DATES: All nominations must be received no later than February 24, 2020.

ADDRESSES: Nominations and completed applications should be sent to the appropriate BLM offices listed in the **SUPPLEMENTARY INFORMATION** section of this notice.

FOR FURTHER INFORMATION CONTACT: Carrie Richardson, BLM Office of Communications, 1849 C Street NW, Room 5614, Washington, DC 20240; Phone: 202–501–2634, email: *crichardson@blm.gov*. Persons who use a telecommunications device for the

deaf (TDD) may call the Federal Relay Service (FRS) at 1–800–877–8339 to contact Ms. Richardson during normal business hours. The FRS is available 24 hours a day, 7 days a week, to leave a message or question. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION: The Federal Land Policy and Management Act (FLPMA) directs the Secretary of the Interior to involve the public in planning and issues related to management of lands administered by the BLM. Section 309 of FLPMA (43 U.S.C. 1739) directs the Secretary to establish 10- to 15-member citizen-based advisory councils that are consistent with the Federal Advisory Committee Act. The rules governing advisory councils are found at 43 CFR subpart 1784.

Individuals may nominate themselves or others for appointment by the Secretary. Nominees must be residents of the State in which the advisory council has jurisdiction. The BLM will evaluate nominees based on their education, training, experience, and knowledge of the geographic area of the advisory council. Nominees should demonstrate a commitment to collaborative resource decision-making.

Simultaneous with this notice, BLM State Offices will issue press releases providing additional information for submitting nominations.

Before including any address, phone number, email address, or other personal identifying information in the application, nominees should be aware this information may be made publicly available at any time. While the nominee can ask to withhold the personal identifying information from public review, the BLM cannot guarantee that it will be able to do so.

Oregon/Washington

Steens Mountain Advisory Council (SMAC)

Tara Thissell, BLM Burns District Office, 28910 Hwy. 20 West, Hines, OR 97738; Phone: 541–573–4519.

To Apply to the SMAC: Nomination forms and instructions can be obtained by mail through phone request or online at *https://on.doi.gov/2opFACz* . All applications must be accompanied by letters of reference that describe the nominee's experience and qualifications to serve on the SMAC from any represented interests or organizations, a completed SMAC application, and any other information that speaks to the nominee's qualifications. The SMAC consists of members that are representative of the varied groups with an interest in the management of the Steens Mountain Cooperative Management and Protection Area, and include the following membership categories: State environmental representative; local environmental representative; Burns Paiute Tribe; representative of the general public (with no Cooperative Management and Protection Area financial interest); recreational permit holder; private landowner; grazing permittee; fish and recreational fishing; dispersed recreation; mechanized or consumptive recreation; and wild horse management.

San Juan Islands National Monument Advisory Committee (MAC)

Kurt Pindel, BLM San Juan Islands National Monument, P.O. Box 3, 37 Washburn Avenue, Lopez Island, WA 98261; Phone: 509–536–1200.

To Apply to the San Juan Islands MAC: Nomination forms and instructions can be obtained online at *https://www.blm.gov/sites/blm.gov/files/sanjuan-mac-app.pdf.* All applications must be accompanied by letters of reference that describe the nominee's experience and qualifications to serve on the San Juan Islands MAC from any represented interests or organizations, a completed MAC application, and any other information that speaks to the nominee's qualifications. The MAC consists of members that represent recreation, tourism, wildlife, cultural resources, education, and local government and private landowners' interests, as well as concerns of the local tribes and public-at-large.

Utah

Grand Staircase-Escalante National Monument Advisory Committee (MAC)

Harry Barber, BLM Grand Staircase-Escalante National Monument, 669 South Highway 89A, Kanab, UT 84741; Phone: 435–644–1271.

To Apply to the Grand Staircase-Escalante MAC: Nomination forms and instructions are available online at *https://www.blm.gov/sites/blm.gov/files/GetInvolved_RACApplication.pdf.*

Nominees should note the interest area(s) they are applying to represent on their application. All applications must be accompanied by letters of reference that describe the nominee's experience and qualifications to serve on the Grand Staircase-Escalante MAC from any represented interests or organizations, a completed MAC application, and any other information that speaks to the nominee's qualifications. The MAC consists of members that represent archaeology, paleontology, geology, botany, wildlife biology, history, social science, systems ecology, Garfield and Kane Counties, tribal government, education, environment, commercial recreation, and grazing.

(Authority: 43 CFR 1784.4–1)

Jeff Krauss,

Acting Assistant Director for Communications.

[FR Doc. 2020–00241 Filed 1–9–20; 8:45 am]

BILLING CODE 4310–84–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–AKRO–DENA–CAKR–LACL–KOVA–WRST–GAAR–29399; PPAKAKROR4; PPMPRLE1Y.LS0000]

National Park Service Alaska Region Subsistence Resource Commission Program; Notice of Public Meetings

AGENCY: National Park Service, Interior.

ACTION: Meeting notice.

SUMMARY: The National Park Service (NPS) is hereby giving notice that the Aniakchak National Monument Subsistence Resource Commission, Denali National Park Subsistence Resource Commission (SRC), the Cape Krusenstern National Monument SRC, the Lake Clark National Park SRC, the Kobuk Valley National Park SRC, the Wrangell-St. Elias National Park SRC, and the Gates of the Arctic National Park SRC will meet as indicated below.

DATES: The Aniakchak National Monument SRC will meet from 1:00 p.m. to 4:30 p.m. or until business is completed on Thursday, March 12, 2020. Should inclement weather prevent travel throughout the week, the meeting will be held by teleconference on Friday, March 13, 2020. Teleconference participants must call the King Salmon, AK at (907) 246–2154 or (907) 246–3305, by Monday, March 9, 2020, prior to the meeting to receive teleconference passcode information. For more detailed information regarding this meeting, or if you are interested in applying for SRC membership, contact Mark Sturm, Designated Federal Official and Superintendent, at (907) 246–2120, or email at *mark_sturm@nps.gov* or Linda Chisholm, Subsistence Coordinator, at (907) 246–2154 or via email at *linda_chisholm@nps.gov* or Joshua T. Ream, Regional Subsistence Manager, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

The Denali National Park SRC will meet from 10:00 a.m. to 5:00 p.m. or until business is completed on Wednesday, March 25, 2020. Teleconference participants must call the NPS office at (907) 644–3604 prior

to the meeting to receive teleconference passcode information. For more detailed information regarding these meetings, or if you are interested in applying for SRC membership, contact Designated Federal Official Denice Swanke, Acting Superintendent, at (907) 683–9627, or via email at *denice_swanke@nps.gov* or Amy Craver, Subsistence Coordinator, at (907) 644–3604 or via email at *amy_craver@nps.gov* or Joshua Ream, Federal Advisory Committee Group Federal Officer, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

The Cape Krusenstern National Monument SRC will meet from 1:00 p.m. to 5:00 p.m. or until business is completed on Tuesday, February 4, 2020, and from 9:00 a.m. to 12:00 p.m. on Wednesday, February 5, 2020. The alternate meeting dates are Tuesday, February 11, 2020, from 1:00 p.m. to 5:00 p.m., and Wednesday, February 12, 2020, from 9:00 a.m. to 12:00 p.m. at the same location. Teleconference participants must call the NPS office at (907) 442–8342 prior to the meeting to receive teleconference passcode information. For more detailed information regarding this meeting or if you are interested in applying for SRC membership, contact Designated Federal Official Maija Lukin, Superintendent, at (907) 442–8301, or via email at *maija_lukin@nps.gov* or Hannah Atkinson, Cultural Resource Specialist, at (907) 442–8342 or via email at *hannah_atkinson@nps.gov* or Joshua Ream, Federal Advisory Committee Group Federal Officer, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

The Lake Clark National Park SRC will meet from 1:00 p.m. to 4:00 p.m. or until business is completed on Wednesday, April 22, 2020. The alternate meeting date is Wednesday, April 29, 2020, at the same time and location. Teleconference participants must call the NPS office at (907) 644–3627 prior to the meeting to receive teleconference passcode information. For more detailed information regarding this meeting or if you are interested in applying for SRC membership, contact Designated Federal Official Susanne Green, Superintendent, at (907) 644–3627, or via email at *susanne_green@nps.gov* or Liza Rupp, Subsistence Manager, at (907) 644–3648 or via at email *elizabeth_rupp@nps.gov* or Joshua Ream, Federal Advisory Committee Group Federal Officer, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

The Kobuk Valley National Park SRC will meet from 1:00 p.m. to 5:00 p.m. or until business is completed on Thursday, February 6, 2020, and from 9:00 a.m. to 12:00 p.m. on Friday, February 7, 2020. The alternate meeting dates are Thursday, February 13, 2020, from 1:00 p.m. to 5:00 p.m., and Friday, February 14, 2020, from 9:00 a.m. to 12:00 p.m. at the same location. Teleconference participants must call the NPS office at (907) 442–8342 prior to the meeting to receive teleconference passcode information. For more detailed information regarding this meeting or if you are interested in applying for SRC membership, contact Designated Federal Official Maija Lukin, Superintendent, at (907) 442–8301, or via email at *maija_lukin@nps.gov* or Hannah Atkinson, Cultural Resource Specialist, at (907) 442–8342 or via email at *hannah_atkinson@nps.gov* or Joshua Ream, Federal Advisory Committee Group Federal Officer, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

The Wrangell-St. Elias National Park SRC will meet from 9:00 a.m. to 5:00 p.m. on Thursday, February 13, 2020, and from 9:00 a.m. to 5:00 p.m. or until business is completed on Friday, February 14, 2020. If business is completed on February 13, 2020, the meeting will adjourn, and no meeting will take place on February 14, 2020. The alternate meeting dates are Tuesday, February 25, 2020, from 9:00 a.m. to 5:00 p.m., and Wednesday, February 26, 2020, from 9:00 a.m. to 5:00 p.m. or until business is completed at the same location. Teleconference access to the meeting may be requested by calling the NPS office at (907) 822–7236 no later than Wednesday, February 12, 2020. For more detailed information regarding these meetings, or if you are interested in applying for SRC membership, contact Designated Federal Official Ben Bobowski, Superintendent, (907) 822–5234, or via email at *ben_bobowski@nps.gov* or Barbara Cellarius, Subsistence Coordinator, at (907) 822–7236 or via email at *barbara_cellarius@nps.gov* or Joshua Ream, Federal Advisory Committee Group Federal Officer, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

The Gates of the Arctic National Park SRC will meet from 8:30 a.m. to 5:00 p.m. or until business is complete on both Wednesday, April 8, 2020, and Thursday, April 9, 2020. The alternate meeting dates are Wednesday, April 15, 2020, from 9:00 a.m. to 5:00 p.m., and Thursday, April 16, 2020, from 9:00 a.m. to 5:00 p.m. or until business is completed at the same location. Teleconference participants must call the NPS office at (907) 455–0639 prior to the meeting to receive teleconference passcode information. For more detailed information regarding this meeting or if you are interested in applying for SRC membership, contact Designated Federal Official Greg Dudgeon, Superintendent, at (907) 457–5752, or via email at *greg_dudgeon@nps.gov* or Marcy Okada, Subsistence Coordinator, at (907) 455–0639 or via email at *marcy_okada@nps.gov* or Joshua Ream, Federal Advisory Committee Group Federal Officer, at (907) 644–3596 or via email at *joshua_ream@nps.gov.*

ADDRESSES: The Aniakchak National Monument SRC will meet at Katmai National Park, 1000 Silver Street, Bldg. 603, King Salmon, Alaska 99613. The Denali National Park SRC will meet at the MTNT Limited Tribal Village Corporation Office, 123 Takotna Avenue, McGrath, AK 99627. The alternate meeting location for the Denali National Park SRC will be at Pike's Waterfront Lodge, 1850 Hoselton Drive, Fairbanks, AK 99709. The Cape Krusenstern National Monument SRC will meet in the conference room at the Northwest Arctic Heritage Center, 171 3rd Avenue, Kotzebue, AK 99752. The Lake Clark National Park SRC will meet at the Newhalen School, 900 School Road, Newhalen, AK 99606. The Kobuk Valley National Park SRC will meet in the conference room at the Northwest Arctic Heritage Center, 171 3rd Avenue, Kotzebue, AK 99752. The Wrangell-St. Elias National Park SRC will meet at the NPS office in the Copper Center Visitor Center Complex, Wrangell-St. Elias National Park and Preserve, Mile 106.8 Richardson Highway, Copper Center, AK 99573. The Gates of the Arctic National Park SRC will meet at the Shungnak School, 6 West River Road, Shungnak, AK 99773.

SUPPLEMENTARY INFORMATION: The NPS is holding meetings pursuant to the Federal Advisory Committee Act (5 U.S.C. Appendix 1–16). The NPS SRC program is authorized under title VIII, section 808 of the Alaska National Interest Lands Conservation Act (16 U.S.C. 3118).

SRC meetings are open to the public and will have time allocated for public testimony. The public is welcome to present written or oral comments to the SRC. SRC meetings will be recorded and meeting minutes will be available upon request from the Superintendent for public inspection approximately six weeks after the meeting.

Purpose of the Meeting: The agenda may change to accommodate SRC business. The proposed meeting agenda for each meeting includes the following:

1. Call to Order—Confirm Quorum
2. Welcome and Introduction
3. Review and Adoption of Agenda
4. Approval of Minutes
5. Superintendent's Welcome and Review of the SRC Purpose

6. SRC Membership Status
7. SRC Chair and Members' Reports
8. Superintendent's Report
9. Old Business
10. New Business
11. Federal Subsistence Board Update
12. Alaska Boards of Fish and Game Update
13. National Park Service Staff Reports
    a. Superintendent/Ranger Reports
    b. Resource Manager's Report
    c. Subsistence Manager's Report
14. Public and Other Agency Comments
15. Work Session
16. Set Tentative Date and Location for Next SRC Meeting
17. Adjourn Meeting.

SRC meeting location and date may change based on inclement weather or exceptional circumstances. If the meeting date and location are changed, the Superintendent will issue a press release and use local newspapers and radio stations to announce the rescheduled meeting.

Public Disclosure of Comments: Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority: 5 U.S.C. Appendix 2.

Alma Ripps,

Chief, Office of Policy.

[FR Doc. 2020–00197 Filed 1–9–20; 8:45 am]

BILLING CODE 4312–52–P

INTERNATIONAL TRADE COMMISSION

American Manufacturing Competitiveness Act of 2016: Notice of Publication of Petitions For Duty Suspensions and Reductions and Related Disclosure Forms, and Notice of Request for Comments on Those Petitions and Disclosure Forms

AGENCY: United States International Trade Commission.

ACTION: Notice of publication on the Commission's website of petitions for duty suspensions and reductions and related disclosure forms, and notice of request for comments on those petitions and disclosure forms.

SUMMARY: As required by section 3(b)(3) of the American Manufacturing Competitiveness Act of 2016, the Commission has published on its website at *https://mtbps.usitc.gov* the petitions for duty suspensions and reductions and related disclosure forms (hereafter collectively referred to as ''petitions'') that were filed according to requirements. The Commission is now requesting that members of the public submit comments to the Commission on those petitions by the close of business on February 24, 2020. All comments must be submitted via the Commission's designated secure web portal. The Commission will not accept comments submitted in paper or in any other form or format.

DATES: *January 10, 2020:* Date of publication on the Commission's website of petitions for duty suspensions and reductions, and opening date for filing comments concerning those petitions.

February 24, 2020, 5:15 p.m., EST: Closing date and time for the submission of comments on the petitions.

ADDRESSES: All Commission offices are located in the United States International Trade Commission Building, 500 E Street SW, Washington, DC. The public file for this proceeding may be viewed on the Commission's Miscellaneous Tariff Bill Petition System (MTBPS) at *https://mtbps.usitc.gov*.

FOR FURTHER INFORMATION CONTACT: For general inquiries, contact *mtbinfo@usitc.gov*. For filing inquiries, contact the Office of Secretary, Docket Services Division, U.S. International Trade Commission, at *mtbpshelp@usitc.gov* or (202) 205–3238.

The media should contact Peg O'Laughlin, Public Affairs Officer (202–205–1819 or *margaret.olaughlin@usitc.gov*). General information concerning the Commission may be obtained at *https://www.usitc.gov*.

Background: The American Manufacturing Competitiveness Act of 2016 (the Act), 19 U.S.C. 1332 note, establishes a process for the submission and consideration of petitions. The Act requires the Commission to initiate the process by publishing a notice requesting members of the public who can demonstrate that they are likely beneficiaries of duty suspensions or reductions to submit petitions to the Commission. As required by the Act, the Commission published that notice in the **Federal Register** on October 11, 2019 (84 FR 54924), with all such petitions to be submitted by the close of business on December 10, 2019.

Section 3(b)(3)(A) of the Act requires that the Commission, no later than 30 days after the expiration of the period for filing petitions, that is, by January 10, 2020, publish on its website the petitions that contain the information required by the Act. Section 3(b)(3)(B) of the Act requires that the Commission, at the same time, publish a notice requesting members of the public to submit comments to the Commission on the petitions published. Such comments must be submitted to the Commission during the 45-day period beginning on the date of publication of the notice—in this case, by February 24, 2020.

The Act requires the Commission to submit preliminary and final reports to the House Committee on Ways and Means and the Senate Committee on Finance (Committees) on the petitions received. The Commission will submit those reports in June and August 2020, respectively. The reports are to include the Commission's analysis and determinations regarding the petitions, including whether there is domestic production of the article, whether the duty suspension or reduction can likely be administered by the U.S. Customs and Border Protection (CBP), whether the estimated loss in revenues due to the duty suspension or reduction does not exceed $500,000, and whether the duty suspension or reduction will be available to any person importing the article. The Commission is required to classify the petitions into categories based on whether (1) the petition meets the requirements for inclusion in a miscellaneous tariff bill as submitted or with specified technical changes, changes in product scope, or adjustment in the amount of duty reduction; (2) the petition does not meet the petitioning requirements or the petitioner is not a likely beneficiary; and (3) the Commission otherwise recommends not including the petition in the bill. The Committees and the Congress will make the final decision regarding the imported articles to be included in a bill.

The Act also requires the U.S. Department of Commerce (Commerce), with input from CBP and other Federal agencies, to submit a report to the Commission and to the Committees. This report is to include information related to domestic production and technical changes that are necessary for purposes of administration when articles are presented for importation.

Procedures for Filing a Comment: The Commission has promulgated rules of practice and procedure regarding the process for filing comments on the petitions filed. The rules, as amended, are published at 19 CFR part 220 (84 FR 44687, Aug. 27, 2019). See in particular 19 CFR 220.10—220.11. The rules are also posted on the Commission's website along with other materials, including a handbook, designed to assist

the public in filing petitions and comments—see *https://www.usitc.gov/trade_tariffs/mtb_program_information*. Highlights of the filing procedures are presented below only as an overview; persons who are considering filing comments should consult the Commission's rules, handbook, and other materials.

Who may file. As provided for in the Act and in the Commission's rules, any member of the public may file comments. The Commission is particularly interested in receiving comments from domestic producers about whether they produce an article that is identical to, or like or directly competitive with, an article that is the subject of a petition for a duty suspension or reduction, and, if they do, whether they object to such a duty suspension or reduction. The Commission is also interested in receiving comments from individuals and entities who believe that they would be a likely beneficiary of a particular duty suspension or reduction, or who, having been named in the petition or another comment as a likely beneficiary, wish to state that they would not be a likely beneficiary of a particular duty suspension or reduction. The Act defines ''likely beneficiary'' to mean ''an individual or entity likely to utilize, or benefit directly from the utilization of, an article that is the subject of a petition for a duty suspension or reduction.''

Petitioning parties may also submit comments. However, the Commission will not consider any comments that seek to amend a petition that the submitter previously filed.

Method for filing. Comments concerning petitions must be filed electronically via the Commission's designated secure web portal and in the format designated by the Commission in that portal. The portal contains a series of prompts and links that will assist persons in providing the required information. The Commission will not accept comments submitted in paper or in any other form or format. Comments, including any attachments thereto, must otherwise comply with the Commission's rules as further explained in the Commission's Handbook on MTB Filing Procedures. Persons seeking to comment on more than one petition must submit a separate comment for each petition.

Persons filing comments should be prepared to complete their entire comment when they enter the portal because the portal will not allow them to edit, amend, or complete the comment at a later time. Accordingly, a person filing a comment should have all required information in hand when they enter the portal to begin the formal filing process. A list of all the information required to complete a comment may be found in the Commission's Before You File a Comment guide, which is located on the the Commission's MTB information page at *https://www.usitc.gov/trade_tariffs/mtb_program_information*.

Time for filing. To be considered, comments must be filed no earlier than the publication date of this notice in the **Federal Register** and no later than the close of business (5:15 p.m. EST) on February 24, 2020. Consistent with the Act, the Commission will not accept comments filed after that time and date.

Amendment and withdrawal of comments. The Commission's secure web portal will not allow a person who has formally submitted a comment to amend that comment. Instead, that person must withdraw the original comment and file a new comment that incorporates the changes. The new comment must be filed within the 45-day period designated for submitting comments (*i.e.,* before 5:15 p.m. EST on February 24, 2020).

Comments containing confidential business information. The portal will permit persons submitting comments to claim that certain information should be treated either as confidential business information or as information protected from disclosure under the Privacy Act, 5 U.S.C. 552a, (*e.g.,* a home address). In the absence of a claim that such information should be so treated, the Commission will disclose the information to the public when it posts the comments and attachments on the Commission's website. See further information below on possible disclosure of confidential business information.

Confidential Business Information. The Commission will not release information that the Commission considers to be confidential business information within the meaning of § 201.6(a) of its Rules of Practice and Procedure (19 CFR 201.6) unless the party submitting the confidential business information had notice, at the time of submission, that such information would be released by the Commission, or such party subsequently consents to the release of the information.

Confidential business information submitted to the Commission in comments may be disclosed to or used by (1) the Commission in calculating the estimated revenue loss required under the Act, which may be based in whole or in part on the estimated values of imports submitted in comments, as well as by petitioners in their petitions; or (2) the Commission, its employees, and contract personnel (a) in processing petitions and comments and preparing reports under the Act or (b) in internal investigations, audits, reviews, and evaluations relating to the programs, personnel, and operations of the Commission, including under 5 U.S.C. Appendix 3; or (3) Commerce, for use in preparing its report to the Commission and the Committees, and the U.S. Department of Agriculture and CBP, for use in providing information for that report; or (4) U.S. government employees and contract personnel, solely for cybersecurity purposes, subject to the requirement that all contract personnel will sign appropriate nondisclosure agreements.

By order of the Commission.

Issued: January 3, 2020.

William Bishop,

Supervisory Hearings and Information Officer.

[FR Doc. 2020–00100 Filed 1–9–20; 8:45 am]

BILLING CODE 7020–02–P

JUDICIAL CONFERENCE OF THE UNITED STATES

Hearings of the Judicial Conference Advisory Committee on the Federal Rules of Appellate, Bankruptcy, and Civil Procedure

AGENCY: Advisory Committee on the Federal Rules of Appellate, Bankruptcy, and Civil Procedure, Judicial Conference of the United States.

ACTION: Notice of cancellation of public hearing.

SUMMARY: The following public hearing on proposed amendments to the Federal Rules of Appellate, Bankruptcy, and Civil Procedure has been canceled: Appellate, Bankruptcy, and Civil Rules Hearing on January 27, 2020, in Phoenix, AZ.

FOR FURTHER INFORMATION CONTACT: Rebecca A. Womeldorf, Rules Committee Secretary, Rules Committee Staff, Administrative Office of the United States Courts, Washington, DC 20544, telephone (202) 502–1820.

SUPPLEMENTARY INFORMATION: Announcements for this hearing were previously published in 84 FR 42951.

Dated: January 7, 2020.

Rebecca A. Womeldorf,

Rules Committee Secretary.

[FR Doc. 2020–00230 Filed 1–9–20; 8:45 am]

BILLING CODE 2210–55–P

DEPARTMENT OF JUSTICE

Antitrust Division

United States v. National Association for College Admission Counseling; Proposed Final Judgment and Competitive Impact Statement

Notice is hereby given pursuant to the Antitrust Procedures and Penalties Act, 15 U.S.C. 16(b)–(h), that a proposed Final Judgment, Stipulation, and Competitive Impact Statement have been filed with the United States District Court for the District of Columbia in *United States of America* v. *National Association for College Admission Counseling,* Civil Action No. 1:19–cv–03706. On December 12, 2019, the United States filed a Complaint alleging that the National Association for College Admission Counseling (''NACAC'') enacted certain mandatory rules (collectively referred to as the ''Recruiting Rules'') that unlawfully limited competition between its members in violation of Section 1 of the Sherman Act, 15 U.S.C. 1. The proposed Final Judgment, filed at the same time as the Complaint, prevents NACAC from re-imposing those or any similar rules. The proposed Final Judgment also requires NACAC to take specific compliance measures and to cooperate in any investigation or litigation examining whether or alleging that NACAC enacted a Recruiting Rule or any similar rule in violation of Section 1 of the Sherman Act, 15 U.S.C. 1.

Copies of the Complaint, proposed Final Judgment, and Competitive Impact Statement are available for inspection on the Antitrust Division's website at *http://www.justice.gov/atr* and at the Office of the Clerk of the United States District Court for the District of Columbia. Copies of these materials may be obtained from the Antitrust Division upon request and payment of the copying fee set by Department of Justice regulations.

Public comment is invited within 60 days of the date of this notice. Such comments, including the name of the submitter, and responses thereto, will be posted on the Antitrust Division's website, filed with the Court, and, under certain circumstances, published in the **Federal Register**. Comments should be directed to Aaron Hoag, Chief, Technology and Financial Services Section, Antitrust Division, Department of Justice, 450 Fifth Street NW, Suite 7100, Washington, DC 20530 (telephone: 202–514–4890).

Amy Fitzpatrick,

Counsel to the Senior, Director of Investigations and Litigation.

United States District Court for the District of Columbia

United States of America, Department of Justice, Antitrust Division, 450 5th Street NW, Suite 7100, Washington, DC 20530, Plaintiff, v. *National Association for College Admission Counseling, 1050 North Highland St., Suite 400, Arlington, VA 22201,* Defendant.

Complaint

The United States of America, acting under the direction of the Attorney General of the United States, brings this civil antitrust action to obtain equitable relief against Defendant National Association for College Admission Counseling. The United States alleges as follows.

I. Introduction

1. This action challenges under Section 1 of the Sherman Act, 15 U.S.C. 1, a number of rules that restrained competition between colleges and universities (''colleges'') for the recruitment of first-year and transfer students.

2. Defendant National Association for College Admission Counseling (''NACAC'') is the leading national trade association for college admissions. Defendant's members are divided roughly into two groups: Non-profit colleges and their admissions personnel, and high schools and their guidance counselors. NACAC's college members compete vigorously with each other for college students, both incoming freshmen and transfer students. These colleges compete in a variety of college services, including tuition cost, majors offered, ease and cost of application, campus amenities, quality of education, reputation of the institution, and prospects for employment following graduation.

3. One condition of membership in NACAC is adherence to NACAC's Code of Ethics and Professional Practices (''CEPP'' or ''Ethics Rules''), which sets forth mandatory rules for how member organizations engage in college admissions. These rules are drafted, voted on, and enforced by NACAC members.

4. As part of its CEPP, NACAC includes certain rules regarding the recruitment of students by colleges. Prior to September 2019, among these rules were ones that prevented, or severely limited, colleges from (1) directly recruiting transfer students from another college, (2) offering incentives of any kind to college applicants who applied via a process known as Early Decision, and (3) recruiting incoming college freshmen after May 1 (together, ''Recruiting Rules'').

5. The Recruiting Rules were not reasonably necessary to any separate, legitimate procompetitive collaboration between NACAC members. As part of its CEPP, NACAC establishes many rules and regulations for its members' conduct throughout the college admissions process, including, among others, when applications may open and close, the definitions of Early Decision and Early Access, and the use of paid agents in recruiting students. Many of these rules appear to strengthen the market for college admissions. The Recruiting Rules, however, were not reasonably necessary to achieve the otherwise market-enhancing rules contained in the CEPP, and furthermore had the effect of unlawfully restraining competition among NACAC's college members, resulting in harm to college applicants and potential transfer students.

6. By establishing and enforcing the Recruiting Rules, NACAC substantially reduced competition among colleges for college applicants and potential transfer students and deprived these consumers of the benefits that result from colleges vigorously competing for students. These Recruiting Rules, which were horizontal agreements among the schools participating in NACAC, denied American college applicants and potential transfer students access to competitive financial aid packages and benefits and restricted their opportunities to move between colleges.

7. In September 2019, NACAC members voted to remove the Recruiting Rules from the CEPP. Removal of the Recruiting Rules became effective as of the time of the vote.

8. NACAC's Recruiting Rules were unlawful restraints of trade that violated Section 1 of the Sherman Act, 15 U.S.C. 1. The United States seeks an order prohibiting such agreements and other relief.

II. Jurisdiction and Venue

9. Defendant NACAC is located in, and represents members that do business in, the United States. The rules at issue affected primarily the provision of college services in the United States. The colleges that provide these college services charge significant prices to students, many of whom legally reside outside the state. The sale of college services, and the NACAC rules that affect the sale, are therefore in the flow

of and substantially affect interstate commerce. The Court has subject matter jurisdiction under Section 4 of the Sherman Act, 15 U.S.C. 4, and under 28 U.S.C. 1331 and 1337, to prevent and restrain Defendant and its members from violating Section 1 of the Sherman Act, 15 U.S.C. 1.

10. Defendants have consented to venue and personal jurisdiction in this district. Venue is proper in this district under Section 12 of the Clayton Act, 15 U.S.C. 22, and 28 U.S.C. 1391.

III. Defendant

11. Defendant NACAC is a trade association comprised of college admissions personnel and high school guidance counselors and their respective institutions. Although NACAC does have members around the world, its principal focus is on college admissions in the United States. NACAC currently has in excess of 15,000 members, representing several thousand colleges and high schools. In addition to maintaining and enforcing the CEPP, NACAC provides educational training to members, engages in lobbying and other public outreach, and holds dozens of popular college fairs that allow colleges to meet and recruit prospective students.

IV. Trade and Commerce

12. NACAC is the largest trade association focused on college admissions in the United States.

13. There is significant competition among colleges for college students, especially incoming freshmen. Colleges compete on a number of different dimensions of college services, including tuition cost, majors offered, ease and cost of application, campus amenities, quality of education, reputation of the institution, and prospects for employment following graduation. The focal point for that competition is the college admissions process.

14. Colleges employ a number of competitive tactics to encourage students to apply for admission to, and ultimately attend, their institutions. Colleges typically heavily advertise to prospective applicants, including by sending physical and electronic mailings, by participating in college fairs, and by direct solicitation on high school campuses. Competition, however, does not end there. If a prospective student is accepted by more than one college, there is typically a competitive negotiation between the student and each college over the financial aid package offered to the student. Additionally, if a college has not met its enrollment goals by the summer before school begins, it often will reach back out to prospective students to make a competitive pitch to entice the student to commit to enrolling at the college in the fall. Finally, even after classes begin, many colleges advertise college transfer programs that allow students to move from one college to another between semesters.

15. In competitive circumstances, colleges would compete vigorously for students to purchase their college services. This competition benefits students because it lowers the cost of attendance and increases the incentive that the colleges have to provide high quality or innovative services. Competition also improves an applicant's ability to negotiate for a better financial aid package with the college. Defendant's Recruiting Rules, however, blunted several avenues of competition for students and disrupted the normal competitive mechanisms that would otherwise apply.

V. The Unlawful Rules

16. For decades, NACAC has had a set of rules governing the college admissions process for its members. Historically, some of the rules were mandatory for all members, and others were voluntary ''best practices.'' In 2017, NACAC members voted to reformulate the mandatory rules into the 2017 CEPP. The CEPP rules are mandatory for all NACAC members, which includes most non-profit colleges and universities in the United States, and also for any non-member institutions that participate in NACAC's college fairs. Accordingly, agreeing to NACAC membership, or agreeing to participate in a NACAC college fair, is equivalent to agreeing with other members or college fair participants to execute on the restrictions in the CEPP. The 2017 CEPP governs many aspects of the college admissions process for its members, including, most relevant to this action, the recruitment of students.

17. The 2017 CEPP included several rules that unreasonably restricted some of the ways in which colleges recruited incoming freshmen and transfer students. The three Recruiting Rules at issue in this case are (1) the Transfer Student Recruiting Rule, (2) the Early Decision Incentives Rule, and (3) the First-Year Undergraduate Recruiting Rule. While the CEPP certainly included rules and regulations that were aimed at, and actually do, increase competitiveness between schools and ease the burden of students applying to college, these Recruiting Rules were not reasonably necessary to those procompetitive rules or any other separate, legitimate business transaction or collaboration between NACAC's members. Prior to the 2017 CEPP, virtually identical rules were voted on and included in earlier NACAC rules and have been in place for years.

A. Transfer Student Recruiting Rule

18. The Transfer Student Recruiting Rule was codified at paragraph II.D.5 of the 2017 CEPP and instructed that, ''[c]olleges must not solicit transfer applications from a previous year's applicant or prospect pool unless the students have themselves initiated a transfer inquiry or the college has verified prior to contacting the students that they are either enrolled at a college that allows transfer recruitment from other colleges or are not currently enrolled in a college.''

19. The Transfer Student Recruiting Rule acted as a ban on affirmatively recruiting transfer students, unduly restraining competition for transfer students amongst colleges.

20. Without this opportunity for colleges to compete, potential transfer students may be unaware of transfer opportunities that may provide them lower priced or higher quality college services.

21. Absent the Transfer Student Recruiting Rule, colleges can engage in significantly more recruitment of transfer students through direct solicitation or otherwise. Furthermore, colleges will likely seek to provide better experiences to their existing student base in order to retain them in the face of increased competition for transfers.

B. Early Decision Incentives Rule

22. The Early Decision Incentives Rule was codified at paragraph II.A.3.a.vi of the 2017 CEPP and provided that ''[c]olleges must not offer incentives exclusive to students applying or admitted under an Early Decision application plan. Examples of incentives include the promise of special housing, enhanced financial aid packages, and special scholarships for Early Decision admits.''

23. NACAC defined Early Decision in the 2017 CEPP as an application plan where ''[s]tudents commit to a first-choice college and, if admitted, agree to enroll and withdraw their other college applications.'' The Early Decision application plan is akin to an exclusive contract in any other industry. In this case, the student foregoes the opportunity to consider the competitive offers of other institutions in exchange for an early decision on acceptance. Colleges thus stand as direct competitors for Early Decision

applicants, because those applicants are far more likely, if accepted, to attend the college. This results in an increased yield, which is the percentage of accepted applicants that choose to attend the college. Yield is critically important to colleges—overestimating expected yield can lead to less students attending than anticipated (thus lowering total tuition received), which could force the college to cut classes or layoff staff. The increased yield from Early Decision applicants is financially significant to colleges.

24. The Early Decision Incentives Rule explicitly limited the scope of competition for Early Decision students by removing the ability of colleges to incent students financially or otherwise. At base, the only form of payment an institution may provide in exchange for the exclusive contract with an applicant is the early decision itself. The rule prohibited all other forms of competition specifically targeted at particular Early Decision applicants.

25. Absent the Early Decision Incentives Rule, colleges are free to use any number of competitive levers to more aggressively recruit students. Some institutions may prefer to offer only the early decision, while others might compete more aggressively, such as by offering scholarships, preferential housing, or early course registration for those admitted under Early Decision.

C. First-Year Undergraduate Recruiting Rule

26. The First-Year Undergraduate Recruiting Rule was codified at paragraph II.B.5 of the 2017 CEPP and required that, among other things, ''[c]olleges will not knowingly recruit or offer enrollment incentives to students who are already enrolled, registered, have declared their intent, or submitted contractual deposits to other institutions.'' Furthermore, while the rule allowed colleges to ''contact students who have neither deposited nor withdrawn their applications to let them know that they have not received a response from them,'' it also commanded that schools could ''neither offer nor imply additional financial aid or other incentives'' were available unless the student had ''affirmed that they [had] not deposited elsewhere and [were] still interested in discussing fall enrollment.''

27. The First-Year Undergraduate Recruiting Rule imposed significant restraints on a college's ability to recruit students. The rule created an arbitrary deadline of May 1 for all colleges to cease improving their recruitment offers to students, even though many students do not decide on a college until well after May 1 and many colleges therefore can reallocate resources to make better offers after May 1. Furthermore, the rule imposed significant hurdles before a college could improve its offer to a prospective student, requiring that the student first affirm both that they ''[had] not deposited elsewhere'' and were ''still interested in discussing fall enrollment.'' By directly limiting the ability of colleges to improve their offers to students, the First-Year Undergraduate Recruiting Rule operated as a significant restraint on competition.

28. The arbitrariness of the May 1 deadline was fully highlighted by the recognized exception to the rule ''when students are admitted from a wait list.'' Section II.C of the CEPP regulates institutions' use of wait lists and explicitly authorizes schools to accept students off of a wait list as late as August 1, even when those students have already committed to attend another school. NACAC thus allows for vigorous competition over a student already committed to another school when a change in circumstances frees up a spot for a student on the wait list. The change in circumstances that free up additional resources to make a better offer is not conceptually distinct, but the rules explicitly allowed the former and prohibited the latter, restricting an opportunity for students to benefit from the sorting process.

29. Absent the First-Year Undergraduate Recruiting Rule, institutions are free to continue to improve their offers to students after May 1, to the benefit of those students. If students have made up their minds about their school of choice, or are otherwise insensitive to the change in circumstances, they can simply reject any further offers received from other schools. For students who may change their minds due to a more beneficial offer, continued recruitment can only work to their benefit.

VI. Violation Alleged

30. Defendant's college members are direct competitors in college services and compete vigorously for students. Defendant coordinated and enforced an anticompetitive agreement that restrained colleges from improving their offers or otherwise competing vigorously to be selected by students in the college admissions process.

31. Defendant's Recruiting Rules eliminated significant forms of competition to attract students. These rules, which were horizontal agreements between NACAC's college members, denied college applicants and potential transfer students access to potentially better financial aid packages and benefits and restricted their opportunities to move between colleges that offered superior services.

32. Accordingly, Defendant's Recruiting Rules constituted unreasonable restraints of trade in violation of Section 1 of the Sherman Act, 15 U.S.C. 1.

VII. Request for Relief

33. The United States requests that this Court:

(a) Adjudge and decree that Defendant's Recruiting Rules are unreasonable restraints of trade and interstate commerce in violation of Section 1 of the Sherman Act;

(b) enjoin and restrain Defendant from enforcing or adhering to any Recruiting Rules that unreasonably restrict competition for students;

(c) permanently enjoin and restrain Defendant from establishing similar rules in the future, except as prescribed by the Court;

(d) award the United States such other relief as the Court may deem just and proper to redress and prevent recurrence of the alleged violations and to dissipate the anticompetitive effects of the illegal agreements entered into by Defendant; and

(e) award the United States the costs of this action.

Dated: December 12, 2019.

Respectfully submitted,

FOR PLAINTIFF UNITED STATES OF AMERICA

Makan Delrahim,
Assistant Attorney General for Antitrust.

Aaron D. Hoag,
Chief, Technology and Financial Services Section.

Bernard A. Nigro, Jr. (D.C. Bar #412357),
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Kathleen O'Neill,
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Erin Craig,
Adrienne Hahn,
Trial Attorneys.

United States Department of Justice, Antitrust Division, Technology and Financial Services Section, 450 Fifth Street NW, Suite 7100, Washington, DC 20530, Telephone: (202) 514–4890, Email: ryan.struve@usdoj.gov.

United States District Court for the District of Columbia

United States of America, Plaintiff, v. *National Association for College Admission Counseling,* Defendant.

[Proposed] Final Judgment

Whereas, Plaintiff, United States of America, filed its Complaint on [DATE], alleging that Defendant National Association for College Admission Counseling violated Section 1 of the Sherman Act, 15 U.S.C. § 1, the United States and the Defendant, by its attorneys, have consented to the entry of this Final Judgment without trial or adjudication of any issue of fact or law;

And whereas, this Final Judgment does not constitute any evidence against or admission by any party regarding any issue of fact or law;

And whereas, the Defendant agrees to be bound by the provisions of this Final Judgment pending its approval by this Court;

And whereas, the Defendant agrees to undertake certain actions and refrain from certain conduct for the purpose of remedying the anticompetitive effects alleged in the Complaint;

Now therefore, before any testimony is taken, without trial or adjudication of any issue of fact or law, and upon consent of the parties, it is *ordered, adjudged, and decreed:*

I. Jurisdiction

This Court has jurisdiction over the subject matter and each of the parties to this action. The Complaint states a claim upon which relief may be granted against the Defendant under Section 1 of the Sherman Act, as amended, 15 U.S.C. 1.

II. Definitions

As used in this Final Judgment:

A. ''NACAC'' and ''Defendant'' mean the National Association for College Admission Counseling, a non-profit trade association with its headquarters in Arlington, Virginia, its successors and assigns, and its subsidiaries, divisions, groups, affiliates, partnerships, and joint ventures, and their directors, officers, managers, agents, and employees.

B. ''Agreement'' means any agreement, understanding, pact, contract, or arrangement, formal or informal, oral or written, between two or more persons.

C. ''Early Decision'' means the college application plan as defined and used by the Ethics Rules.

D. ''Early Decision Incentives Rule'' means any Rule or Agreement, or part of a Rule or Agreement, including, but not limited to, Section II.A.3.a.vi of the Ethics Rules, that restrains any person from offering incentives to students applying under an Early Decision application plan that are not available to students applying under a different application plan.

E. ''First-Year Undergraduate Recruiting Rule'' means any Rule or Agreement, or part of a Rule or Agreement, including, but not limited to, Section II.B.5 of the Ethics Rules, that restrains any college or university from recruiting or offering enrollment incentives to first-year college applicants on the basis that (a) a particular date has passed; (b) the applicants have either declined admission or not affirmatively indicated that they are still interested in attending that institution; or (c) the applicants have already enrolled in, registered at, declared their intent to enroll in or register at, or submitted contractual deposits to other institutions.

F. ''Transfer Student Recruiting Rule'' means any Rule or Agreement, or part of a Rule or Agreement, including, but not limited to, Section II.D.5 of the Ethics Rules, that restrains any person from recruiting or offering enrollment incentives to transfer students.

G. ''Ethics Rules'' means NACAC's Code of Ethics and Professional Practices.

H. ''Rule'' means an enforceable regulation governing particular conduct or activities.

I. ''Person'' means any natural person, college or university, corporation, company, partnership, joint venture, firm, association, proprietorship, agency, board, authority, commission, office, or other business or legal entity, whether private or governmental.

J. ''Management'' means all officers, directors, committee chairs, and board members of NACAC, or any other person with management or supervisory responsibilities for NACAC's operations.

III. Applicability

This Final Judgment applies to NACAC, and to all other persons in active concert or participation with NACAC who receive actual notice of this Final Judgment by personal service or otherwise.

IV. Prohibited Conduct

Defendant shall not establish, attempt to establish, maintain, or enforce any Early Decision Incentives Rule, Transfer Student Recruiting Rule, or First-Year Undergraduate Recruiting Rule. To the extent such prohibited rules currently exist in the Ethics Rules, Defendant must promptly abolish them.

V. Conduct Not Prohibited

Nothing in Section IV shall prohibit Defendant from maintaining or enforcing any current provisions in the Ethics Rules other than those specifically enumerated in Paragraphs II.D, E, and F.

VI. Required Conduct

A. Within ten (10) days of entry of this Final Judgment, Defendant shall appoint an Antitrust Compliance Officer and identify to United States the Antitrust Compliance Officer's name, business address, and telephone number. Within forty-give (45) days of a vacancy in the Defendant's Antitrust Compliance Officer position, the Defendant shall appoint a replacement, and shall identify to the United States the replacement Antitrust Compliance Officer's name, business address, telephone number, and email address. The Defendant's initial or replacement appointment of an Antitrust Compliance Officer is subject to the approval of the United States in its sole discretion.

B. The Antitrust Compliance Officer shall:

1. Within sixty (60) days of entry of the Final Judgment, furnish to all of the Defendant's Management a copy of this Final Judgment, the Competitive Impact Statement, and a cover letter in a form attached as Exhibit 1;

2. within sixty (60) days of entry of the Final Judgment, in a manner to be devised by Defendant and approved by the United States, provide the Defendant's Management and employees reasonable notice of the meaning and requirements of this Final Judgment;

3. annually brief the Defendant's Management on the meaning and requirements of this Final Judgment and the antitrust laws;

4. brief any person who succeeds a person in any position identified in Paragraph II(J), within sixty (60) days of such succession;

5. obtain from each member of Management, within sixty (60) days of that person's receipt of the Final Judgment, a certification that he or she (i) has read and, to the best of his or her ability, understands and agrees to abide by the terms of this Final Judgment; (ii) is not aware of any violation of the Final Judgment that has not been reported to the Defendant; and (iii) understands that any person's failure to comply with this Final Judgment may result in an enforcement action for civil or criminal contempt of court against the Defendant and/or any person who violates this Final Judgment;

6. maintain a record of certifications received pursuant to this Section; and

7. annually communicate to the Defendant's Management and employees that they may disclose to the Antitrust Compliance Officer, without reprisal, information concerning any potential violation of this Final Judgment or the antitrust laws.

C. Within sixty (60) days of entry of the Final Judgment, Defendant shall furnish notice of this action to its members through (1) direct communication, in a form approved by the United States prior to communication and containing the text of Exhibit 2 and (2) the creation of website pages linked to the Defendant website, to be posted for no less than one (1) year after the date of entry of the Final Judgment, containing the text of Exhibit 2 and links to the Final Judgment, Competitive Impact Statement, and Complaint on the Antitrust Division's website.

D. Defendant shall:

1. Upon Management's or the Antitrust Compliance Officer's learning of any violation or potential violation of any of the terms and conditions contained in this Final Judgment, promptly take appropriate action to investigate, and in the event of a violation, terminate or modify the activity so as to comply with this Final Judgment and maintain all documents related to any violation or potential violation of this Final Judgment;

2. within sixty (60) days of Management's or the Antitrust Compliance Officer's learning of any violation or potential violation of any of the terms and conditions contained in this Final Judgment, file with the United States a statement describing any violation or potential violation, which shall include a description of any communications constituting the violation or potential violation, including the date and place of the communication, the persons involved, and the subject matter of the communication, and steps taken to remedy any violation; and

3. have its CEO or CFO, and its General Counsel, certify in writing to the United States annually on the anniversary date of the entry of this Final Judgment that the Defendant has complied with the provisions of this Final Judgment.

VII. Compliance Inspection

A. For the purposes of determining or securing compliance with this Final Judgment, or of determining whether the Final Judgment should be modified or vacated, and subject to any legally recognized privilege, from time to time authorized representatives of the United States, including agents retained by the United States, shall, upon the written request of an authorized representative of the Assistant Attorney General in charge of the Antitrust Division, and on reasonable notice to Defendant be permitted:

1. Access during Defendant's office hours to inspect and copy, or at the option of the United States, to require Defendant to provide electronic or hard copies of, all books, ledgers, accounts, records, data, and documents in the possession, custody, or control of NACAC, relating to any matters contained in this Final Judgment; and

2. to interview, either informally or on the record, Defendant's Management, officers, employees, or agents, who may have their individual counsel present, regarding such matters. The interviews shall be subject to the reasonable convenience of the interviewee and without restraint or interference by Defendant.

B. Upon the written request of an authorized representative of the Assistant Attorney General in charge of the Antitrust Division, Defendant shall submit written reports or responses to written interrogatories, under oath if requested, relating to any of the matters contained in this Final Judgment as may be requested.

C. No information or documents obtained by the means provided in this Section VII shall be divulged by the United States to any person other than an authorized representative of the executive branch of the United States, except in the course of legal proceedings to which the United States is a party (including grand jury proceedings), or for the purpose of securing compliance with this Final Judgment, or for law enforcement purposes, or as otherwise required by law.

D. If at the time information or documents are furnished by Defendant to the United States, Defendant represents and identifies in writing the material in any such information or documents to which a claim of protection may be asserted under Rule 26(c)(1)(G) of the Federal Rules of Civil Procedure, and Defendant marks each pertinent page of such material, ''Subject to claim of protection under Rule 26(c)(1)(G) of the Federal Rules of Civil Procedure,'' then the United States shall give Defendant ten (10) calendar days' notice prior to divulging such material in any legal proceeding (other than a grand jury proceeding).

VIII. Retention of Jurisdiction

This Court retains jurisdiction to enable any party to this Final Judgment to apply to this Court at any time for further orders and directions as may be necessary or appropriate to carry out or construe this Final Judgment, to modify any of its provisions, to enforce compliance, and to punish violations of its provisions.

IX. Enforcement of Final Judgment

A. The United States retains and reserves all rights to enforce the provisions of this Final Judgment, including the right to seek an order of contempt from the Court. Defendant agrees that in any civil contempt action, any motion to show cause, or any similar action brought by the United States regarding an alleged violation of this Final Judgment, the United States may establish a violation of the Final Judgment and the appropriateness of any remedy therefor by a preponderance of the evidence, and Defendant waives any argument that a different standard of proof should apply.

B. This Final Judgment should be interpreted to give full effect to the procompetitive purposes of the antitrust laws and to restore all competition the United States alleged was harmed by the challenged conduct. Defendant agrees that it may be held in contempt of, and that the Court may enforce, any provision of this Final Judgment that, as interpreted by the Court in light of these procompetitive principles and applying ordinary tools of interpretation, is stated specifically and in reasonable detail, whether or not it is clear and unambiguous on its face. In any such interpretation, the terms of this Final Judgment should not be construed against either party as the drafter.

C. In any enforcement proceeding in which the Court finds that Defendant has violated this Final Judgment, the United States may apply to the Court for a one-time extension of this Final Judgment, together with other relief as may be appropriate. In connection with any successful effort by the United States to enforce this Final Judgment against Defendant, whether litigated or resolved before litigation, Defendant agrees to reimburse the United States for the fees and expenses of its attorneys, as well as any other costs, including experts' fees, incurred in connection with that enforcement effort, including in the investigation of the potential violation.

D. For a period of four (4) years following the expiration of the Final Judgment, if the United States has evidence that Defendant violated this Final Judgment before it expired, the United States may file an action against Defendant in this Court requesting that the Court order (1) Defendant to comply with the terms of this Final Judgment for an additional term of at least four

years following the filing of the enforcement action under this Section, (2) any appropriate contempt remedies, (3) any additional relief needed to ensure the Defendant complies with the terms of the Final Judgment, and (4) fees or expenses as called for in Paragraph IX(C).

X. Expiration of Final Judgment

Unless this Court grants an extension, this Final Judgment shall expire seven (7) years from the date of its entry, except that after five (5) years from the date of its entry, this Final Judgment may be terminated upon notice by the United States to the Court and Defendant that the continuation of the Final Judgment no longer is necessary or in the public interest.

XI. Notice

For purposes of this Final Judgment, any notice or other communication required to be provided to the United States shall be sent to the person at the address set forth below (or such other addresses as the United States may specify in writing to Defendant): Chief, Technology and Financial Services Section, U.S. Department of Justice, Antitrust Division, 450 Fifth Street NW, Suite 7100, Washington, DC 20530.

XII. Public Interest Determination

Entry of this Final Judgment is in the public interest. The parties have complied with the requirements of the Antitrust Procedures and Penalties Act, 15 U.S.C. 16, including making copies available to the public of this Final Judgment, the Competitive Impact Statement, and any comments thereon and the United States' responses to comments. Based upon the record before the Court, which includes the Competitive Impact Statement and any comments and response to comments filed with the Court, entry of this Final Judgment is in the public interest.

Date: _____

Court approval subject to procedures of Antitrust Procedures and Penalties Act, 15 U.S.C. 16

_____

United States District Judge

Exhibit 1

[Company Letterhead]

[Name and Address of Antitrust Compliance Officer]

Re: *Early Decision Incentives Rule, Transfer Student Recruiting Rule, or First-Year Undergraduate Recruiting Rule*

Dear [XX]:

I am providing you this notice regarding a judgment recently entered by a federal judge in Washington, DC affecting rulemaking practices. The judgment applies to our association and all of its employees, including you, so it is important that you understand the obligations it imposes on us. [CEO Name] has asked me to let each of you know that [s/he] expects you to take these obligations seriously and abide by them.

The judgment prohibits us from establishing rules that restrict the ability of colleges to recruit early decision applicants, incoming freshmen, and transfer students. There are limited exceptions to this restriction. You must consult me before determining whether a particular recruiting rule is subject to an exception under the judgment.

A copy of the court order is attached. Please read it carefully and familiarize yourself with its terms. The judgment, rather than the above description, is controlling. If you have any questions about the judgment or how it affects your activities, please contact me as soon as possible.

Thank you for your cooperation.

Sincerely,

[*Defendant's Antitrust Compliance Officer*]

Exhibit 2

Please take notice that National Association for College Admission Counseling (''NACAC'') has entered into a settlement with the United States Department of Justice relating to its rulemaking practices.

On December 12th, 2019, the United States filed a federal civil antitrust Complaint alleging that NACAC established rules that restricted its members' ability to recruit college applicants and transfer students in violation of Section 1 of the Sherman Act, 15 U.S.C. 1. At the same time, the United States filed a proposed settlement that prohibits NACAC from entering into, maintaining, or enforcing such rules.

As part of its settlement with the United States, NACAC confirmed that it has withdrawn any offending rule already in place.

The Final Judgment, which was recently entered by a federal district court, is effective for seven years. Copies of the Complaint, Final Judgment, and Competitive Impact Statement are available at:

[Link to Complaint]

[Link to Final Judgment]

[Link to Competitive Impact Statement]

United States District Court for the District of Columbia

United States of America, Plaintiff, v. *National Association for College Admission Counseling,* Defendant.

Competitive Impact Statement

Plaintiff United States of America (''United States''), pursuant to Section 2(b) of the Antitrust Procedures and Penalties Act (''APPA'' or ''Tunney Act''), 15 U.S.C. 16(b)–(h), files this Competitive Impact Statement relating to the proposed Final Judgment submitted for entry in this civil antitrust proceeding.

I. Nature and Purpose of the Proceeding

On December 12, 2019, the United States filed a civil antitrust Complaint alleging that Defendant National Association for College Admission Counseling (''NACAC'') enacted certain mandatory rules (collectively referred to as the ''Recruiting Rules'') that unlawfully limited competition between its members in violation of Section 1 of the Sherman Act, 15 U.S.C. § 1.

NACAC members include colleges and their admissions personnel and high schools and their guidance counselors. NACAC's college members compete with each other for college students, both college applicants and potential transfer students. Colleges compete on a number of different dimensions, including tuition cost, majors offered, ease and cost of application, campus amenities, quality of education, reputation of the institution, and prospects for employment following graduation. The Complaint, however, alleges that NACAC, through its rulemaking authority, established three mandatory rules that limited the manner in which its college members could compete for college applicants and potential transfer students.

The first rule, the Transfer Student Recruiting Rule, expressly prevented colleges from affirmatively recruiting potential transfer students from other schools. The second rule, the Early Decision Incentives Rule, forbade colleges from offering incentives, financial or otherwise, to Early Decision applicants. The third rule, the First-Year Undergraduate Recruiting Rule, limited the ability of colleges to recruit incoming first-year students after May 1. These three rules—collectively ''the Recruiting Rules''—were not reasonably necessary to any separate, legitimate business transaction or collaboration among NACAC and its members. According to the Complaint, the Defendant's Recruiting Rules unlawfully restricted competition between NACAC's members and were unreasonable restraints of trade that violated Section 1 of the Sherman Act, 15 U.S.C. § 1.

At the same time the Complaint was filed, the United States filed a Stipulation and Order and proposed Final Judgment, which would remedy the violation by enjoining the Defendant from enacting, maintaining, or enforcing the Recruiting Rules, subject to limited exceptions.

NACAC members voted in September of 2019 to repeal the Recruiting Rules, effective as of that time, and the Final Judgment seeks to prevent NACAC from re-imposing those or any similar rules. The proposed Final Judgment also requires NACAC to take specific compliance measures and to cooperate in any investigation or litigation examining whether or alleging that NACAC enacted a Recruiting Rule or any similar rule in violation of Section 1 of the Sherman Act, 15 U.S.C. § 1.

The United States and NACAC have stipulated that the proposed Final Judgment may be entered after compliance with the APPA. Entry of the proposed Final Judgment would terminate this action, except that the Court would retain jurisdiction to construe, modify, or enforce the provisions of the proposed Final Judgment and to punish violations thereof.

II. Description of the Events Giving Rise to the Alleged Violation

A. The Defendant

NACAC is a nonstock corporation organized in the State of Delaware and headquartered in Arlington, Virginia. Beyond establishing ethics rules that govern its members, NACAC holds dozens of college fairs that allow prospective students to interact with a number of regional and national colleges.

B. Defendant-Established Anticompetitive Recruiting Rules

The Complaint alleges that NACAC, through the version of its Code of Ethics and Professional Practices (''CEPP'' or ''Ethics Rules'') that was effective during and prior to 2018, established three rules that unreasonably restrained competition between its member colleges for college applicants and potential transfer students. These rules, described in more detail below, were voted on by NACAC's members and were mandatory not only for NACAC's members but also for any non-members that participated in NACAC's college fairs. Failure to abide by the rules embodied in the CEPP could have resulted in disciplinary actions by NACAC, including but not limited to exclusion from its college fairs or expulsion from NACAC.

1. Transfer Student Recruiting Rule

The first rule at issue is the Transfer Student Recruiting Rule, originally embodied at Section II.D.5 of the CEPP. That rule provided that:

> Colleges must not solicit transfer applications from a previous year's applicant or prospect pool unless the students have themselves initiated a transfer inquiry or the college has verified prior to contacting the students that they are either enrolled at a college that allows transfer recruitment from other colleges or are not currently enrolled in a college.

As described in the Complaint, this rule acted as a substantial impediment to competition between colleges for potential transfer students, and provided only limited exceptions that allowed for transfer recruitment. Absent this restriction, colleges will be free to recruit potential transfer students more aggressively, which will lead to colleges to making more attractive offers, like lower tuition costs or higher quality admissions packages.

2. Early Decision Incentives Rule

The second rule at issue is the Early Decision Incentives Rule, which was at Section II.A.3.a.vi of the CEPP. This rule stated that:

> Colleges must not offer incentives exclusive to students applying or admitted under an Early Decision application plan. Examples of incentives include the promise of special housing, enhanced financial aid packages, and special scholarships for Early Decision admits. Colleges may, however, disclose how admission rates for Early Decision differ from those for other admission plans.

This rule, as alleged in the Complaint, unreasonably limited the competition for Early Decision applicants. In the current admissions ecosystem, some colleges allow students to apply via Early Decision, which provides students with an accelerated decision on admission to that school but also requires from the student a binding commitment to attend if admitted. The Early Decision Incentives Rule forbade colleges from offering incentives (beyond the accelerated decision) to those students. This was an unreasonable restraint on competition. Absent this restriction, colleges will be free to offer a set of incentives for Early Decision applicants that best serves the college and its applicant base, including special scholarships, preferred housing, or other discounts on tuition. Over time, this will lead to more aggressive recruitment of students through more attractive offers of admission.

3. First-Year Undergraduate Recruiting Rule

The final rule at issue is the First-Year Undergraduate Recruiting Rule, which was at Section II.B.5 of the CEPP. This rule required that:

> Colleges will not knowingly recruit or offer enrollment incentives to students who are already enrolled, registered, have declared their intent, or submitted contractual deposits to other institutions. May 1 is the point at which commitments to enroll become final, and colleges must respect that. The recognized exceptions are when students are admitted from a wait list, students initiate inquiries themselves, or cooperation is sought by institutions that provide transfer programs. These statements capture the spirit and intent of this requirement:
>
> a. Whether before or after May 1, colleges may at any time respond to a student-initiated request to reconsider an offer or reinstate an application.
>
> b. Once students have declined an offer of admission, colleges may no longer offer them incentives to change or revisit their college decision. Before May 1, however, colleges may ask whether candidates would like a review of their financial aid package or other incentives before their admission is canceled, so long as the question is asked at the time that the admitted students first notify them of their intent to cancel their admission.
>
> c. After May 1, colleges may contact students who have neither deposited nor withdrawn their applications to let them know that they have not received a response from them. Colleges may neither offer nor imply additional financial aid or other incentives unless students have affirmed that they have not deposited elsewhere and are still interested in discussing fall enrollment.

This rule imposed several limits on the ability of colleges to recruit incoming first-year students. First, it prevented colleges from recruiting students who the colleges knew had declared their intent, through making a deposit or otherwise, to attend another institution. Second, it prevented colleges from offering incentives to students who had declined an offer of admission (with the limited exception set forth in II.B.5.b. of the CEPP). Third, it limited the ability of colleges, after May 1, to recruit students who had neither made a deposit nor withdrawn their application.

The First-Year Undergraduate Recruiting Rule imposed significant restrictions on competition between colleges for first-year students. It limited the ability of colleges to continue to compete for students who had declined an offer of admission and significantly restricted the ability of colleges to compete for students after May 1. Absent these restrictions, colleges will be free to offer more aggressive financial aid packages or other inducements to students to entice them to enroll. Due to

this enhanced competition, students will receive more attractive offers of admission.

C. NACAC's Recruiting Rules Were Unlawful Agreements Under Section 1 of the Sherman Act

Horizontal restraints that are not reasonably necessary to any separate, legitimate business transaction or collaboration are unlawful under Section 1 of the Sherman Act. Section 1 outlaws any ''contract, combination . . . , or conspiracy, in restraint of trade or commerce.'' 15 U.S.C. 1. Courts have long interpreted this language to prohibit only ''unreasonable'' restraints of trade. *Bus. Elecs. Corp.* v. *Sharp Elecs. Corp.,* 485 U.S. 717, 723 (1988). Courts have consistently found that trade association rules are no different than horizontal agreements entered into between the association's members. For example, in *National Society of Professional Engineers* v. *United States,* 435 U.S. 679 (1978), the Supreme Court upheld a challenge to a trade association's ban on competitive bidding as a horizontal agreement between its members. Other Supreme Court precedent is consistent with this outcome.[1] Additionally, when a trade association works to enforce a stated policy, it faces ''more rigorous antitrust scrutiny.'' *Allied Tube & Conduit Corp.* v. *Indian Head, Inc., 486 U.S. 492, 501 n.6 (1988) (citing Radiant Burners, Inc.* v. *Peoples Gas Light & Coke Co., 364 U.S. 656 (1961); Fashion Originators' Guild of America, Inc. v. FTC, 312 U.S. 457 (1941)).*

The United States has historically challenged the actions of trade associations or other membership organizations where they advance unreasonable restraints among their memberships. In addition to the *Professional Engineers* case cited above, on June 27, 1995, the United States challenged several accreditation practices of the American Bar Association as violative of Section 1.[2] The United States has also challenged association rules in the chiropractic,[3] nursing,[4] and realty[5] industries, among others.

As described in the Complaint, NACAC's Recruiting Rules were horizontal agreements restricting competition between colleges for college applicants and potential transfer students. The Recruiting Rules suppressed and eliminated competition to the detriment of college applicants and potential transfer students by restraining the ability of NACAC's college members to recruit them. They were not reasonably necessary to achieve the otherwise market-enhancing rules contained in the CEPP. Accordingly, they were unlawful agreements under Section 1 of the Sherman Act.

III. Explanation of the Proposed Final Judgment

The proposed Final Judgment sets forth (1) conduct in which the Defendant may not engage; (2) certain actions the Defendant is required to take to ensure compliance with the terms of the proposed Final Judgment; (3) the Defendant's obligations to cooperate with the United States in its investigations of the promulgation of any future rules similar to the Recruiting Rules; and (4) oversight procedures the United States may use to ensure compliance with the proposed Final Judgment.

A. Prohibited Conduct

Section IV of the proposed Final Judgment prevents the Defendant from establishing, maintaining, or enforcing any ''Transfer Student Recruiting Rule,'' ''Early Decision Incentives Rule,'' or ''First-Year Undergraduate Recruiting Rule'' or any similar rules. The proposed Final Judgment defines each of those terms in Section II, and the definitions are intended to correspond with the rules described in Section II.B of this Competitive Impact Statement.

Furthermore, Section IV of the proposed Final Judgment requires that the Defendant abolish any ''Transfer Student Recruiting Rule,'' ''Early Decision Incentives Rule,'' or ''First-Year Undergraduate Recruiting Rule'' currently within its ethics rules.

B. Required Conduct

Section VI of the proposed Final Judgment sets forth various mandatory procedures to ensure the Defendant's compliance with the proposed Final Judgment, including a requirement to provide officers, directors, and management with copies of the proposed Final Judgment and annual briefings about its terms. Additionally, Section VI requires the Defendant to provide notice to its members about this action that includes a description of the terms of the proposed Final Judgment, the Competitive Impact Statement, and the Complaint. Finally, Section VI requires the Defendant's Antitrust Compliance Officer to promptly notify the United States upon receipt of any complaint that the terms of the proposed Final Judgment have been violated.

C. Compliance

To facilitate monitoring of the Defendant's compliance with the proposed Final Judgment, Section VII permits the United States, upon reasonable notice and a written request:

(1) Access during the Defendant's office hours to inspect and copy, or at the option of the United States, to require the Defendant to provide electronic or hard copies of, all books, ledgers, accounts, records, data, and documents in the possession, custody, or control of the Defendant, relating to any matters contained in the proposed Final Judgment; and (2) to interview, either informally or on the record, the Defendant's officers, employees, or agents.

Additionally, Section VII requires the Defendant, upon written request of the United States, to submit written reports or responses to interrogatories relating to any of the matters contained in the proposed Final Judgment.

D. Enforcement and Expiration of the Final Judgment

The proposed Final Judgment contains provisions designed to promote compliance and make the enforcement of the Final Judgment as effective as possible. Paragraph IX(A) provides that the United States retains and reserves all rights to enforce the provisions of the proposed Final Judgment, including its rights to seek an order of contempt from the Court. Under the terms of this paragraph, the Defendant has agreed that in any civil contempt action, any motion to show cause, or any similar action brought by the United States regarding an alleged violation of the Final Judgment, the United States may establish the violation and the appropriateness of any remedy by a preponderance of the evidence and that the Defendant has waived any argument that a different standard of proof should apply. This provision aligns the standard for compliance obligations

[1] See, generally, *Fed. Trade Comm'n* v. *Indiana Fed'n of Dentists,* 476 U.S. 447 (1986); *California Dental Ass'n* v. *Fed. Trade Comm'n,* 526 U.S. 756 (1999).

[2] Complaint, *United States* v. *American Bar Association,* No. 95–cv–1211 (D.D.C. June 27, 1995).

[3] Complaint, *United States* v. *Oklahoma State Chiropractic Independent Physicians Association,* No 13–CV–21–TCK–TLW (N.D. Okla. January 10, 2013).

[4] Complaint, *United States* v. *Arizona Hospital and Healthcare Association,* No. CV07–1030–PHX (D.Ariz. May 22, 2007).

[5] Complaint, *United States* v. *National Association of Realtors,* No. 05C–5140 (N.D. Ill. Sept. 8, 2005).

with the standard of proof that applies to the underlying offense that the compliance commitments address.

Paragraph IX(B) provides additional clarification regarding the interpretation of the provisions of the proposed Final Judgment. The proposed Final Judgment was drafted to restore the competition the United States alleged was harmed by the Defendant's challenged conduct. The Defendant agrees that it will abide by the proposed Final Judgment, and that it may be held in contempt of this Court for failing to comply with any provision of the proposed Final Judgment that is stated specifically and in reasonable detail, as interpreted in light of this procompetitive purpose.

Paragraph IX(C) of the proposed Final Judgment provides that if the Court finds in an enforcement proceeding that the Defendant has violated the Final Judgment, the United States may apply to the Court for a one-time extension of the Final Judgment, together with such other relief as may be appropriate. In addition, to compensate American taxpayers for any costs associated with investigating and enforcing violations of the proposed Final Judgment, Paragraph IX(C) provides that, in any successful effort by the United States to enforce the Final Judgment against the Defendant, whether litigated or resolved before litigation, that the Defendant will reimburse the United States for attorneys' fees, experts' fees, and other costs incurred in connection with any enforcement effort, including the investigation of the potential violation.

Paragraph IX(D) states that the United States may file an action against the Defendant for violating the Final Judgment for up to four years after the Final Judgment has expired or been terminated. This provision is meant to address circumstances such as when evidence that a violation of the Final Judgment occurred during the term of the Final Judgment is not discovered until after the Final Judgment has expired or been terminated or when there is not sufficient time for the United States to complete an investigation of an alleged violation until after the Final Judgment has expired or been terminated. This provision, therefore, makes clear that, for four years after the Final Judgment has expired or been terminated, the United States may still challenge a violation that occurred during the term of the Final Judgment.

Finally, Section X of the proposed Final Judgment provides that the Final Judgment will expire seven years from the date of its entry, except that after five years from the date of its entry, the Final Judgment may be terminated upon notice by the United States to the Court and the Defendant that the continuation of the Final Judgment is no longer necessary or in the public interest.

IV. Remedies Available to Potential Private Litigants

Section 4 of the Clayton Act, 15 U.S.C. 15, provides that any person who has been injured as a result of conduct prohibited by the antitrust laws may bring suit in federal court to recover three times the damages the person has suffered, as well as costs and reasonable attorneys' fees. Entry of the proposed Final Judgment neither impairs nor assists the bringing of any private antitrust damage action. Under the provisions of Section 5(a) of the Clayton Act, 15 U.S.C. 16(a), the proposed Final Judgment has no prima facie effect in any subsequent private lawsuit that may be brought against the Defendant.

V. Procedures Available for Modification of the Proposed Final Judgment

The United States and the Defendant have stipulated that the proposed Final Judgment may be entered by the Court after compliance with the provisions of the APPA, provided that the United States has not withdrawn its consent. The APPA conditions entry upon the Court's determination that the proposed Final Judgment is in the public interest.

The APPA provides a period of at least 60 days preceding the effective date of the proposed Final Judgment within which any person may submit to the United States written comments regarding the proposed Final Judgment. Any person who wishes to comment should do so within 60 days of the date of publication of this Competitive Impact Statement in the **Federal Register**, or the last date of publication in a newspaper of the summary of this Competitive Impact Statement, whichever is later. All comments received during this period will be considered by the U.S. Department of Justice, which remains free to withdraw its consent to the proposed Final Judgment at any time before the Court's entry of the Final Judgment. The comments and the response of the United States will be filed with the Court. In addition, comments will be posted on the U.S. Department of Justice, Antitrust Division's internet website and, under certain circumstances, published in the **Federal Register**.

Written comments should be submitted to: Chief, Technology and Financial Services Section Antitrust Division, United States Department of Justice, 450 Fifth Street NW, Suite 7100, Washington, DC 20530.

The proposed Final Judgment provides that the Court retains jurisdiction over this action, and the parties may apply to the Court for any order necessary or appropriate for the modification, interpretation, or enforcement of the Final Judgment.

VI. Alternatives to the Proposed Final Judgment

The United States considered, as an alternative to the proposed Final Judgment, a full trial on the merits against NACAC. The United States could have continued the litigation and sought preliminary and permanent injunctions against NACAC. The United States is satisfied, however, that the requirements of the proposed Final Judgment will preserve competition among colleges for the provision of college services to college applicants and potential transfer students in the United States. Thus, the proposed Final Judgment achieves all or substantially all of the relief the United States would have obtained through litigation, but avoids the time, expense, and uncertainty of a full trial on the merits of the Complaint.

VII. Standard of Review Under the APPA for the Proposed Final Judgment

The Clayton Act, as amended by the APPA, requires that proposed consent judgments in antitrust cases brought by the United States be subject to a 60-day comment period, after which the Court shall determine whether entry of the proposed Final Judgment ''is in the public interest.'' 15 U.S.C. 16(e)(1). In making that determination, the Court, in accordance with the statute as amended in 2004, is required to consider:

> (A) the competitive impact of such judgment, including termination of alleged violations, provisions for enforcement and modification, duration of relief sought, anticipated effects of alternative remedies actually considered, whether its terms are ambiguous, and any other competitive considerations bearing upon the adequacy of such judgment that the court deems necessary to a determination of whether the consent judgment is in the public interest; and
>
> (B) the impact of entry of such judgment upon competition in the relevant market or markets, upon the public generally and individuals alleging specific injury from the violations set forth in the complaint including consideration of the public benefit, if any, to be derived from a determination of the issues at trial.

15 U.S.C. 16(e)(1)(A) & (B). In considering these statutory factors, the Court's inquiry is necessarily a limited one as the government is entitled to

''broad discretion to settle with the defendant within the reaches of the public interest.'' *United States* v. *Microsoft Corp.,* 56 F.3d 1448, 1461 (D.C. Cir. 1995); *United States* v. *U.S. Airways Grp., Inc.,* 38 F. Supp. 3d 69, 75 (D.D.C. 2014) (explaining that the ''court's inquiry is limited'' in Tunney Act settlements); *United States* v. *InBev N.V./S.A.,* No. 08–1965 (JR), 2009 U.S. Dist. LEXIS 84787, at *3 (D.D.C. Aug. 11, 2009) (noting that a court's review of a consent judgment is limited and only inquires ''into whether the government's determination that the proposed remedies will cure the antitrust violations alleged in the complaint was reasonable, and whether the mechanism to enforce the final judgment are clear and manageable'').

As the U.S. Court of Appeals for the District of Columbia Circuit has held, under the APPA a court considers, among other things, the relationship between the remedy secured and the specific allegations in the government's complaint, whether the proposed Final Judgment is sufficiently clear, whether its enforcement mechanisms are sufficient, and whether it may positively harm third parties. *See Microsoft,* 56 F.3d at 1458–62. With respect to the adequacy of the relief secured by the proposed Final Judgment, a court may ''not to make de novo determination of facts and issues.'' *United States* v. *W. Elec. Co.,* 993 F.2d 1572, 1577 (D.C. Cir. 1993) (quotation marks omitted); *see also Microsoft,* 56 F.3d at 1460–62; *United States* v. *Alcoa, Inc.,* 152 F. Supp. 2d 37, 40 (D.D.C. 2001); *United States* v. *Enova Corp.,* 107 F. Supp. 2d 10, 16 (D.D.C. 2000); *InBev,* 2009 U.S. Dist. LEXIS 84787, at *3. Instead, ''[t]he balancing of competing social and political interests affected by a proposed antitrust consent decree must be left, in the first instance, to the discretion of the Attorney General.'' *W. Elec. Co.,* 993 F.2d at 1577 (quotation marks omitted). ''The court should bear in mind the *flexibility* of the public interest inquiry: the court's function is not to determine whether the resulting array of rights and liabilities is one that will *best* serve society, but only to confirm that the resulting settlement is within the *reaches* of the public interest.'' *Microsoft,* 56 F.3d at 1460 (quotation marks omitted). More demanding requirements would ''have enormous practical consequences for the government's ability to negotiate future settlements,'' contrary to congressional intent. *Id.* at 1456. ''The Tunney Act was not intended to create a disincentive to the use of the consent decree.'' *Id.*

The United States' predictions about the efficacy of the remedy are to be afforded deference by the Court. *See, e.g., Microsoft,* 56 F.3d at 1461 (recognizing courts should give ''due respect to the Justice Department's . . . view of the nature of its case''); *United States* v. *Iron Mountain, Inc.,* 217 F. Supp. 3d 146, 152–53 (D.D.C. 2016) (''In evaluating objections to settlement agreements under the Tunney Act, a court must be mindful that [t]he government need not prove that the settlements will perfectly remedy the alleged antitrust harms[;] it need only provide a factual basis for concluding that the settlements are reasonably adequate remedies for the alleged harms.'') (internal citations omitted); *United States* v. *Republic Servs., Inc.,* 723 F. Supp. 2d 157, 160 (D.D.C. 2010) (noting ''the deferential review to which the government's proposed remedy is accorded''); *United States* v. *Archer-Daniels-Midland Co.,* 272 F. Supp. 2d 1, 6 (D.D.C. 2003) (''A district court must accord due respect to the government's prediction as to the effect of proposed remedies, its perception of the market structure, and its view of the nature of the case''). The ultimate question is whether ''the remedies [obtained by the Final Judgment are] so inconsonant with the allegations charged as to fall outside of the 'reaches of the public interest.' '' *Microsoft,* 56 F.3d at 1461 (*quoting W. Elec. Co.,* 900 F.2d at 309).

Moreover, the Court's role under the APPA is limited to reviewing the remedy in relationship to the violations that the United States has alleged in its complaint, and does not authorize the Court to ''construct [its] own hypothetical case and then evaluate the decree against that case.'' *Microsoft,* 56 F.3d at 1459; *see also U.S. Airways,* 38 F. Supp. 3d at 75 (noting that the court must simply determine whether there is a factual foundation for the government's decisions such that its conclusions regarding the proposed settlements are reasonable); *InBev,* 2009 U.S. Dist. LEXIS 84787, at *20 (''the 'public interest' is not to be measured by comparing the violations alleged in the complaint against those the court believes could have, or even should have, been alleged''). Because the ''court's authority to review the decree depends entirely on the government's exercising its prosecutorial discretion by bringing a case in the first place,'' it follows that ''the court is only authorized to review the decree itself,'' and not to ''effectively redraft the complaint'' to inquire into other matters that the United States did not pursue. *Microsoft,* 56 F.3d at 1459–60.

In its 2004 amendments to the APPA, Congress made clear its intent to preserve the practical benefits of using consent judgments proposed by the United States in antitrust enforcement, Public Law 108–237 § 221, and added the unambiguous instruction that ''[n]othing in this section shall be construed to require the court to conduct an evidentiary hearing or to require the court to permit anyone to intervene.'' 15 U.S.C. 16(e)(2); *see also U.S. Airways,* 38 F. Supp. 3d at 76 (indicating that a court is not required to hold an evidentiary hearing or to permit intervenors as part of its review under the Tunney Act). This language explicitly wrote into the statute what Congress intended when it first enacted the Tunney Act in 1974. As Senator Tunney explained: ''[t]he court is nowhere compelled to go to trial or to engage in extended proceedings which might have the effect of vitiating the benefits of prompt and less costly settlement through the consent decree process.'' 119 Cong. Rec. 24,598 (1973) (statement of Sen. Tunney). ''A court can make its public interest determination based on the competitive impact statement and response to public comments alone.'' *U.S. Airways,* 38 F. Supp. 3d at 76 (citing *Enova Corp.,* 107 F. Supp. 2d at 1

VIII. Determinative Documents

There are no determinative materials or documents within the meaning of the APPA that were considered by the United States in formulating the proposed Final Judgment.

Dated: December 20, 2019

Respectfully submitted,

Ryan Struve,
United States Department of Justice, Antitrust Division, Technology and Financial Services Section, 450 Fifth Street NW, Suite 7100, Washington, DC 20530, Telephone: (202) 514–4890, Email: ryan.struve@usdoj.gov.

[FR Doc. 2020–00213 Filed 1–9–20; 8:45 am]

BILLING CODE 4410–11–P

DEPARTMENT OF JUSTICE

Notice of Lodging of Proposed Consent Decree Under the Comprehensive Environmental Response, Compensation and Liability Act

On January 3, 2020, the Department of Justice lodged a proposed Consent Decree with the United States District Court for the District of New Jersey in the lawsuit entitled *United States* v. *Fisher Scientific Company, L.L.C. and*

Sandvik, Inc. Civil Action No. 2:20–cv–135.

The United States filed this lawsuit under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The United States' complaint names Fisher Scientific Company, L.L.C. and Sandvik, Inc. as defendants. The complaint requests recovery of costs that the United States incurred and will incur responding to releases of hazardous substances at the Fair Law Well Field Superfund Site in Fair Lawn, New Jersey. The complaint also seeks injunctive relief. Both defendants signed the consent decree. They will perform the remedial action that EPA selected for the site and pay any response costs above the amount that the United States recovered from Eastman Kodak Company in a 2014 bankruptcy settlement. In return, the United States agrees not to sue the defendants under sections 106 and 107 of CERCLA with respect to the site. The publication of this notice opens a period for public comment on the consent decree. Comments should be addressed to the Assistant Attorney General, Environment and Natural Resources Division, and should refer to *United States* v. *Fisher Scientific Company, L.L.C. and Sandvik, Inc.* D.J. Ref. No. 90–11–3–12072. All comments must be submitted no later than thirty (30) days after the publication date of this notice. Comments may be submitted either by email or by mail:

To submit comments:	*Send them to:*
By email	*pubcomment-ees.enrd@usdoj.gov.*
By mail	Assistant Attorney General, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044–7611.

During the public comment period, the Consent Decree may be examined and downloaded at this Justice Department website: *https://www.justice.gov/enrd/consent-decrees.* We will provide a paper copy of the Consent Decree upon written request and payment of reproduction costs. Please mail your request and payment to: Consent Decree Library, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044–7611.

Please enclose a check or money order for $88.50 (25 cents per page reproduction cost) payable to the United States Treasury. For a paper copy without the exhibits and signature pages, the cost is $9.50.

Henry Friedman,

Assistant Section Chief, Environmental Enforcement Section, Environment and Natural Resources Division.

[FR Doc. 2020–00226 Filed 1–9–20; 8:45 am]

BILLING CODE 4410–15–P

NATIONAL COUNCIL ON DISABILITY

Sunshine Act Meetings

TIME AND DATES: The Members of the National Council on Disability (NCD) will meet by phone Monday, January 27, 2020, 10:00 a.m.–12:00 p.m., ET.

Interested parties may join the meeting in listen-only capacity.

Call-In Number: 800–353–6461; Passcode: 1568366, Host Name: Neil Romano.

MATTERS TO BE CONSIDERED: The Council conduct a business meeting, to include approving the budget for fiscal year 2020 and vote on policy priorities for the fiscal year. Following agency updates, Mary Lamielle, Executive Director National Center for Environmental Health Strategies, Inc. is invited to provide a presentation on environmental intolerances to protect the public health and improve the lives of people injured or disabled by chemical and environmental exposures.

Agenda: The times provided below are approximations for when each agenda item is anticipated to be discussed (all times Eastern):

Monday, January 27, 2020

10:00 a.m.–10:10 a.m. Welcome and call to order
- Roll call
- Call for vote on acceptance of agenda
- Call for vote of August 2019 Council Meeting minutes

10:10 a.m.–11:10 a.m.
- Chairman's report
- Executive report
- Financial report and call for vote on fiscal year 2020 budget
- Policy report and call for vote on fiscal year 2020 policy priorities
- Legislative affairs report

11:10 a.m.–11:40 a.m. Presentation on environmental intolerances to protect the public health and improve the lives of people injured or disabled by chemical and environmental exposures

11:40 a.m.–12:00 p.m. Unfinished and new business

12:00 p.m. Adjourn

CONTACT PERSON FOR MORE INFORMATION: Anne Sommers, NCD, 1331 F Street NW, Suite 850, Washington, DC 20004; 202–272–2004 (V), 202–272–2022 (Fax).

Accommodations: A CART streamtext link has been arranged for this meeting. The web link to access CART on Monday, January 27, 2020 is: *http://www.streamtext.net/player?event=NCD-TELECONFERENCE*

Dated: January 8, 2020.

Sharon M. Lisa Grubb,

Executive Director and CEO.

[FR Doc. 2020–00340 Filed 1–8–20; 4:15 pm]

BILLING CODE 8421–02–P

NATIONAL FOUNDATION ON THE ARTS AND THE HUMANITIES

Federal Council on the Arts and the Humanities

Arts and Artifacts Indemnity Panel Advisory Committee

AGENCY: Federal Council on the Arts and the Humanities; National Foundation on the Arts and the Humanities.

ACTION: Notice of Meeting.

SUMMARY: Pursuant to the Federal Advisory Committee Act, notice is hereby given that the Federal Council on the Arts and the Humanities will hold a meeting of the Arts and Artifacts Domestic Indemnity Panel.

DATES: The meeting will be held on Tuesday, February 18, 2020, from 12:00 p.m. to 5:00 p.m.

ADDRESSES: The meeting will be held by teleconference originating at the National Endowment for the Arts, Washington, DC 20506.

FOR FURTHER INFORMATION CONTACT: Elizabeth Voyatzis, Committee Management Officer, 400 7th Street SW, Room 4060, Washington, DC 20506, (202) 606–8322; *evoyatzis@neh.gov.*

SUPPLEMENTARY INFORMATION: The purpose of the meeting is for panel review, discussion, evaluation, and recommendation on applications for Certificates of Indemnity submitted to the Federal Council on the Arts and the Humanities, for exhibitions beginning on or after April 1, 2020. Because the meeting will consider proprietary financial and commercial data provided in confidence by indemnity applicants, and material that is likely to disclose trade secrets or other privileged or confidential information, and because it is important to keep the values of objects to be indemnified and the methods of transportation and security measures confidential, I have determined that that the meeting will be closed to the public pursuant to subsection (c)(4) of section 552b of Title 5, United States Code. I have made this

determination under the authority granted me by the Chairman's Delegation of Authority to Close Advisory Committee Meetings, dated April 15, 2016.

Dated: January 7, 2020.

Elizabeth Voyatzis,

Committee Management Officer, Federal Council on the Arts and the Humanities & Deputy General Counsel, National Endowment for the Humanities.

[FR Doc. 2020–00235 Filed 1–9–20; 8:45 am]

BILLING CODE 7536–01–P

NATIONAL SCIENCE FOUNDATION

RIN 3145–AA58

Notice on Penalty Inflation Adjustments for Civil Monetary Penalties

AGENCY: National Science Foundation.

ACTION: Notice announcing updated penalty inflation adjustments for civil monetary penalties for 2020.

SUMMARY: The National Science Foundation (NSF or Foundation) is providing notice of its adjusted maximum civil monetary penalties, effective January 15, 2020. These adjustments are required by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (the 2015 Act).

FOR FURTHER INFORMATION CONTACT: Bijan Gilanshah, Assistant General Counsel, Office of the General Counsel, National Science Foundation, 2415 Eisenhower Avenue, Alexandria, VA 22314. Telephone: 703–292–5055.

SUPPLEMENTARY INFORMATION: On June 27, 2016, NSF published an interim final rule amending its regulations to adjust, for inflation, the maximum civil monetary penalties that may be imposed for violations of the Antarctic Conservation Act of 1978 (ACA), as amended, 16 U.S.C. 2401 *et seq.,* and the Program Fraud Civil Remedies Act of 1986 (PFCRA), 31 U.S.C. 3801, *et seq.* These adjustments are required by the 2015 Act. The 2015 Act also requires agencies to make subsequent annual adjustments for inflation. Pursuant to OMB guidance dated December 16, 2019, the cost-of-living adjustment multiplier for 2020 is 1.01764. Accordingly, the 2020 annual inflation adjustments for the maximum penalties under the ACA are $17,583 ($17,278 × 1.01764) for violations and $29,755 ($29,239 × 1.01764) for knowing violations of the ACA. Finally, the 2020 annual inflation adjustment for the maximum penalty for violations under PFCRA is $11,665 ($11,463 × 1.01764).

Dated: January 6, 2020.

Suzanne Plimpton,

Reports Clearance Officer, National Science Foundation.

[FR Doc. 2020–00250 Filed 1–9–20; 8:45 am]

BILLING CODE 7555–01–P

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50–608; NRC–2019–0173]

SHINE Medical Technologies, LLC

AGENCY: Nuclear Regulatory Commission.

ACTION: License application; opportunity to request a hearing and petition for leave to intervene; order imposing procedures.

SUMMARY: On October 8, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff accepted and docketed an application submitted by SHINE Medical Technologies, LLC (SHINE), dated July 17, 2019, filed pursuant to the Atomic Energy Act of 1954, as amended, and the NRC's regulations, for an operating license for the SHINE Medical Isotope Production Facility. In accordance with the NRC's regulations, any persons whose interest may be affected by the issuance of an operating license to SHINE may file a request for a hearing and petition for leave to intervene with respect to the action. Because the license application contains Sensitive Unclassified Non-Safeguards Information (SUNSI) and Safeguards Information (SGI), an included Order imposes procedures to obtain access to SUNSI and SGI for contention preparation.

DATES: A request for a hearing must be filed by March 10, 2020. Any potential party as defined in § 2.4 of title 10 of the *Code of Federal Regulations* (10 CFR), who believes access to SUNSI and/or SGI is necessary to respond to this notice must request document access by January 21, 2020.

ADDRESSES: Please refer to Docket Number 50–608 or Docket ID NRC–2019–0173 when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *https://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Steven T. Lynch, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: 301–415–1524; email: *Steven.Lynch@nrc.gov.*

SUPPLEMENTARY INFORMATION:

I. Introduction

By letter dated July 17, 2019 (ADAMS Accession No. ML19211C044) and supplemented by letter dated November 14, 2019 (ADAMS Accession No. ML19337A275), SHINE filed with the NRC, pursuant to Section 103 of the Atomic Energy Act and part 50, ''Domestic Licensing of Production and Utilization Facilities,'' of title 10 of the *Code of Federal Regulations* (10 CFR), an application for an operating license for the SHINE Medical Isotope Production Facility to be located in Janesville, Wisconsin (ADAMS Package Accession No. ML19211C143). The November 14, 2019, application supplement (ADAMS Package Accession No. ML19331A832) addressed facility design changes and administrative errors identified in application documents. A notice of receipt and availability of this application was previously published in the **Federal Register** on September 10, 2019 (84 FR 47557).

SHINE has proposed to construct and operate a facility in Janesville, Wisconsin for the production of molybdenum-99 (Mo-99) through the irradiation and processing of a uranyl sulfate solution. As described in the operating license application, the proposed facility would comprise an irradiation facility and radioisotope production facility. The irradiation facility would consist of eight subcritical operating assemblies (or irradiation units), which would each be licensed as a utilization facility, as defined in 10 CFR 50.2, ''Definitions,'' and supporting structures, systems, and components (SSCs) for the irradiation of low enriched uranium. The radioisotope production facility would consist of hot cell structures, licensed collectively as a production facility, as defined in 10

CFR 50.2, and associated SSCs for the processing of irradiated material and extraction and purification of Mo-99. The irradiation facility and radioisotope production facility are collectively referred to as the SHINE Medical Isotope Production Facility. Issuance of the operating license would authorize the applicant to operate the SHINE Medical Isotope Production Facility for a 30-year period.

In accordance with 10 CFR part 2, ''Agency Rules of Practice and Procedure,'' and part 50, the NRC staff performed an acceptance review of the SHINE operating license application and, by letter dated October 8, 2019 (ADAMS Accession No. ML19276D411), accepted the application for docketing under Docket Number 50–608.

II. Opportunity To Request a Hearing and Petition for Leave To Intervene

Within 60 days after the date of publication of this notice, any persons (petitioner) whose interest may be affected by the issuance of an operating license to SHINE may file a request for a hearing and petition for leave to intervene (petition) with respect to the action. Petitions shall be filed in accordance with the Commission's ''Agency Rules of Practice and Procedure'' in 10 CFR part 2. Interested persons should consult a current copy of 10 CFR 2.309, ''Hearing Requests, Petitions to Intervene, Requirements for Standing, and Contentions.'' The NRC's regulations are accessible electronically from the NRC Library on the NRC's website at *https://www.nrc.gov/reading-rm/doc-collections/cfr/.* Alternatively, a copy of the regulations is available at the NRC's Public Document Room, located at One White Flint North, Room O1–F21, 11555 Rockville Pike (First Floor), Rockville, Maryland 20852. If a petition is filed, the Commission or a presiding officer will rule on the petition and, if appropriate, a notice of a hearing will be issued.

As required by 10 CFR 2.309(d) the petition should specifically explain the reasons why intervention should be permitted with particular reference to the following general requirements for standing: (1) The name, address, and telephone number of the petitioner; (2) the nature of the petitioner's right to be made a party to the proceeding; (3) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (4) the possible effect of any decision or order which may be entered in the proceeding on the petitioner's interest.

In accordance with 10 CFR 2.309(f), the petition must also set forth the specific contentions which the petitioner seeks to have litigated in the proceeding. Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the petitioner must provide a brief explanation of the bases for the contention and a concise statement of the alleged facts or expert opinion which support the contention and on which the petitioner intends to rely in proving the contention at the hearing. The petitioner must also provide references to the specific sources and documents on which the petitioner intends to rely to support its position on the issue. The petition must include sufficient information to show that a genuine dispute exists with the applicant or licensee on a material issue of law or fact. Contentions must be limited to matters within the scope of the proceeding. The contention must be one which, if proven, would entitle the petitioner to relief. A petitioner who fails to satisfy the requirements at 10 CFR 2.309(f) with respect to at least one contention will not be permitted to participate as a party.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene. Parties have the opportunity to participate fully in the conduct of the hearing with respect to resolution of that party's admitted contentions, including the opportunity to present evidence, consistent with the NRC's regulations, policies, and procedures.

Petitions must be filed no later than 60 days from the date of publication of this notice. Petitions and motions for leave to file new or amended contentions that are filed after the deadline will not be entertained absent a determination by the presiding officer that the filing demonstrates good cause by satisfying the three factors in 10 CFR 2.309(c)(1)(i) through (iii). The petition must be filed in accordance with the filing instructions in the ''Electronic Submissions (E-Filing)'' section of this document.

A State, local governmental body, Federally-recognized Indian Tribe, or agency thereof, may submit a petition to the Commission to participate as a party under 10 CFR 2.309(h)(1). The petition should state the nature and extent of the petitioner's interest in the proceeding. The petition should be submitted to the Commission no later than 60 days from the date of publication of this notice. The petition must be filed in accordance with the filing instructions in the ''Electronic Submissions (E-Filing)'' section of this document, and should meet the requirements for petitions set forth in this section, except that under 10 CFR 2.309(h)(2) a State, local governmental body, or Federally-recognized Indian Tribe, or agency thereof does not need to address the standing requirements in 10 CFR 2.309(d) if the facility is located within its boundaries. Alternatively, a State, local governmental body, Federally-recognized Indian Tribe, or agency thereof may participate as a non-party under 10 CFR 2.315(c).

If a hearing is granted, any person who is not a party to the proceeding and is not affiliated with or represented by a party may, at the discretion of the presiding officer, be permitted to make a limited appearance pursuant to the provisions of 10 CFR 2.315(a). A person making a limited appearance may make an oral or written statement of his or her position on the issues but may not otherwise participate in the proceeding. A limited appearance may be made at any session of the hearing or at any prehearing conference, subject to the limits and conditions as may be imposed by the presiding officer. Details regarding the opportunity to make a limited appearance will be provided by the presiding officer if such sessions are scheduled.

III. Electronic Submissions (E-Filing)

All documents filed in NRC adjudicatory proceedings, including a request for hearing and petition for leave to intervene (petition), any motion or other document filed in the proceeding prior to the submission of a request for hearing or petition to intervene, and documents filed by interested governmental entities that request to participate under 10 CFR 2.315(c), must be filed in accordance with the NRC's E-Filing rule (72 FR 49139; August 28, 2007, as amended at 77 FR 46562; August 3, 2012). The E-Filing process requires participants to submit and serve all adjudicatory documents over the internet, or in some cases to mail copies on electronic storage media. Detailed guidance on making electronic submissions may be found in the Guidance for Electronic Submissions to the NRC and on the NRC website at *https://www.nrc.gov/site-help/e-submittals.html.* Participants may not submit paper copies of their filings unless they seek an exemption in accordance with the procedures described below.

To comply with the procedural requirements of E-Filing, at least 10 days prior to the filing deadline, the participant should contact the Office of the Secretary by email at *hearing.docket@nrc.gov,* or by telephone at 301–415–1677, to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or

representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating; and (2) advise the Secretary that the participant will be submitting a petition or other adjudicatory document (even in instances in which the participant, or its counsel or representative, already holds an NRC-issued digital ID certificate). Based upon this information, the Secretary will establish an electronic docket for the hearing in this proceeding if the Secretary has not already established an electronic docket.

Information about applying for a digital ID certificate is available on the NRC's public website at *https://www.nrc.gov/site-help/e-submittals/getting-started.html.* Once a participant has obtained a digital ID certificate and a docket has been created, the participant can then submit adjudicatory documents. Submissions must be in Portable Document Format (PDF). Additional guidance on PDF submissions is available on the NRC's public website at *https://www.nrc.gov/site-help/electronic-sub-ref-mat.html.* A filing is considered complete at the time the document is submitted through the NRC's E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59 p.m. Eastern Time (ET) on the due date. Upon receipt of a transmission, the E-Filing system time-stamps the document and sends the submitter an email notice confirming receipt of the document. The E-Filing system also distributes an email notice that provides access to the document to the NRC's Office of the General Counsel and any others who have advised the Office of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the document on those participants separately. Therefore, applicants and other participants (or their counsel or representative) must apply for and receive a digital ID certificate before adjudicatory documents are filed so that they can obtain access to the documents via the E-Filing system.

A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance by contacting the NRC's Electronic Filing Help Desk through the ''Contact Us'' link located on the NRC's public website at *https://www.nrc.gov/site-help/e-submittals.html,* by email to *MSHD.Resource@nrc.gov,* or by a toll-free call at 1–866–672–7640. The NRC Electronic Filing Help Desk is available between 9 a.m. and 6 p.m., ET, Monday through Friday, excluding government holidays.

Participants who believe that they have a good cause for not submitting documents electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with their initial paper filing stating why there is good cause for not filing electronically and requesting authorization to continue to submit documents in paper format. Such filings must be submitted by: (1) First class mail addressed to the Office of the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, Attention: Rulemaking and Adjudications Staff; or (2) courier, express mail, or expedited delivery service to the Office of the Secretary, 11555 Rockville Pike, Rockville, Maryland 20852, Attention: Rulemaking and Adjudications Staff. Participants filing adjudicatory documents in this manner are responsible for serving the document on all other participants. Filing is considered complete by first-class mail as of the time of deposit in the mail, or by courier, express mail, or expedited delivery service upon depositing the document with the provider of the service. A presiding officer, having granted an exemption request from using E-Filing, may require a participant or party to use E-Filing if the presiding officer subsequently determines that the reason for granting the exemption from use of E-Filing no longer exists.

Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing docket which is available to the public at *https://adams.nrc.gov/ehd,* unless excluded pursuant to an order of the Commission or the presiding officer. If you do not have an NRC-issued digital ID certificate as described above, click ''cancel'' when the link requests certificates and you will be automatically directed to the NRC's electronic hearing dockets where you will be able to access any publicly available documents in a particular hearing docket. Participants are requested not to include personal privacy information, such as social security numbers, home addresses, or personal phone numbers in their filings, unless an NRC regulation or other law requires submission of such information. For example, in some instances, individuals provide home addresses in order to demonstrate proximity to a facility or site. With respect to copyrighted works, except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute a Fair Use application, participants are requested not to include copyrighted materials in their submission.

IV. Order Imposing Procedures for Access to SUNSI and SGI for Contention Preparation

A. This Order contains instructions regarding how potential parties to this proceeding may request access to documents containing sensitive unclassified information (including SUNSI and SGI). Requirements for access to SGI are primarily set forth in 10 CFR parts 2 and 73. Nothing in this Order is intended to conflict with the SGI regulations.

B. Within 10 days after publication of this notice of hearing and opportunity to petition for leave to intervene, any potential party who believes access to SUNSI or SGI is necessary to respond to this notice may request access to SUNSI or SGI. A ''potential party'' is any person who intends to participate as a party by demonstrating standing and filing an admissible contention under 10 CFR 2.309. Requests for access to SUNSI or SGI submitted later than 10 days after publication will not be considered absent a showing of good cause for the late filing, addressing why the request could not have been filed earlier.

C. The requestor shall submit a letter requesting permission to access SUNSI, SGI, or both to the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, Attention: Rulemakings and Adjudications Staff, and provide a copy to the Deputy General Counsel for Hearings and Administration, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The expedited delivery or courier mail address for both offices is: U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Rockville, Maryland 20852. The email address for the Office of the Secretary and the Office of the General Counsel are *Hearing.Docket@nrc.gov* and *RidsOgcMailCenter.Resource@nrc.gov,* respectively.[1] The request must include the following information:

(1) A description of the licensing action with a citation to this **Federal Register** notice;

(2) The name and address of the potential party and a description of the potential party's particularized interest that could be harmed by the action identified in C.(1);

(3) If the request is for SUNSI, the identity of the individual or entity requesting access to SUNSI and the

[1] While a request for hearing or petition to intervene in this proceeding must comply with the filing requirements of the NRC's ''E-Filing Rule,'' the initial request to access SUNSI and/or SGI under these procedures should be submitted as described in this paragraph.

requestor's basis for the need for the information in order to meaningfully participate in this adjudicatory proceeding. In particular, the request must explain why publicly available versions of the information requested would not be sufficient to provide the basis and specificity for a proffered contention; and

(4) If the request is for SGI, the identity of each individual who would have access to SGI if the request is granted, including the identity of any expert, consultant, or assistant who will aid the requestor in evaluating the SGI. In addition, the request must contain the following information:

(a) A statement that explains each individual's ''need to know'' the SGI, as required by 10 CFR 73.2 and 10 CFR 73.22(b)(1). Consistent with the definition of ''need to know'' as stated in 10 CFR 73.2, the statement must explain:

(i) Specifically, why the requestor believes that the information is necessary to enable the requestor to proffer and/or adjudicate a specific contention in this proceeding; [2] and

(ii) The technical competence (demonstrable knowledge, skill, training or education) of the requestor to effectively utilize the requested SGI to provide the basis and specificity for a proffered contention. The technical competence of a potential party or its counsel may be shown by reliance on a qualified expert, consultant, or assistant who satisfies these criteria.

(b) A completed Form SF–85, ''Questionnaire for Non-Sensitive Positions,'' for each individual who would have access to SGI. The completed Form SF–85 will be used by the Office of Administration to conduct the background check required for access to SGI, as required by 10 CFR part 2, subpart C, and 10 CFR 73.22(b)(2), to determine the requestor's trustworthiness and reliability. For security reasons, Form SF–85 can only be submitted electronically through the Electronic Questionnaires for Investigations Processing website, a secure website that is owned and operated by the Office of Personnel Management. To obtain online access to the form, the requestor should contact the NRC's Office of Administration at 301–415–3710.[3]

(c) A completed Form FD–258 (fingerprint card), signed in original ink, and submitted in accordance with 10 CFR 73.57(d). Copies of Form FD–258 may be obtained by writing the Office of Administrative Services, Mail Services Center, Mail Stop P1–37, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, or by email to *MAILSVC.Resource@nrc.gov.* The fingerprint card will be used to satisfy the requirements of 10 CFR part 2, subpart C, 10 CFR 73.22(b)(1), and Section 149 of the Atomic Energy Act of 1954, as amended, which mandates that all persons with access to SGI must be fingerprinted for an FBI identification and criminal history records check.

(d) A check or money order payable in the amount of $357.00 [4] to the U.S. Nuclear Regulatory Commission for each individual for whom the request for access has been submitted.

(e) If the requestor or any individual(s) who will have access to SGI believes they belong to one or more of the categories of individuals that are exempt from the criminal history records check and background check requirements in 10 CFR 73.59, the requestor should also provide a statement identifying which exemption the requestor is invoking and explaining the requestor's basis for believing that the exemption applies. While processing the request, the Office of Administration, Personnel Security Branch, will make a final determination whether the claimed exemption applies. Alternatively, the requestor may contact the Office of Administration for an evaluation of their exemption status prior to submitting their request. Persons who are exempt from the background check are not required to complete the SF–85 or Form FD–258; however, all other requirements for access to SGI, including the need to know, are still applicable.

Note: Copies of documents and materials required by paragraphs C.(4)(b), (c), and (d) of this Order must be sent to the following address: U.S. Nuclear Regulatory Commission, ATTN: Personnel Security Branch, Mail Stop TWFN—07D04M, 11555 Rockville Pike, Rockville, MD 20852.

These documents and materials should *not* be included with the request letter to the Office of the Secretary, but the request letter should state that the forms and fees have been submitted as required.

D. To avoid delays in processing requests for access to SGI, the requestor should review all submitted materials for completeness and accuracy (including legibility) before submitting them to the NRC. The NRC will return incomplete packages to the sender without processing.

E. Based on an evaluation of the information submitted under paragraphs C.(3) or C.(4) above, as applicable, the NRC staff will determine within 10 days of receipt of the request whether:

(1) There is a reasonable basis to believe the petitioner is likely to establish standing to participate in this NRC proceeding; and

(2) The requestor has established a legitimate need for access to SUNSI or need to know the SGI requested.

F. For requests for access to SUNSI, if the NRC staff determines that the requestor satisfies both E.(1) and E.(2) above, the NRC staff will notify the requestor in writing that access to SUNSI has been granted. The written notification will contain instructions on how the requestor may obtain copies of the requested documents, and any other conditions that may apply to access to those documents. These conditions may include, but are not limited to, the signing of a Non-Disclosure Agreement or Affidavit, or Protective Order setting forth terms and conditions to prevent the unauthorized or inadvertent disclosure of SUNSI by each individual who will be granted access to SUNSI.[5]

G. For requests for access to SGI, if the NRC staff determines that the requestor has satisfied both E.(1) and E.(2) above, the Office of Administration will then determine, based upon completion of the background check, whether the proposed recipient is trustworthy and reliable, as required for access to SGI by 10 CFR 73.22(b). If the Office of Administration determines that the individual or individuals are trustworthy and reliable, the NRC will promptly notify the requestor in writing. The notification will provide the names of approved individuals as well as the conditions under which the SGI will be provided. Those conditions may include, but are not limited to, the signing of a Non-Disclosure Agreement

[2] Broad SGI requests under these procedures are unlikely to meet the standard for need to know; furthermore, NRC staff redaction of information from requested documents before their release may be appropriate to comport with this requirement. These procedures do not authorize unrestricted disclosure or less scrutiny of a requestor's need to know than ordinarily would be applied in connection with an already-admitted contention or non-adjudicatory access to SGI.

[3] The requestor will be asked to provide his or her full name, social security number, date and place of birth, telephone number, and email address. After providing this information, the requestor usually should be able to obtain access to the online form within one business day.

[4] This fee is subject to change pursuant to the Office of Personnel Management's adjustable billing rates.

[5] Any motion for Protective Order or draft Non-Disclosure Affidavit or Agreement for SUNSI must be filed with the presiding officer or the Chief Administrative Judge if the presiding officer has not yet been designated, within 30 days of the deadline for the receipt of the written access request.

or Affidavit, or Protective Order[6] by each individual who will be granted access to SGI.

H. Release and Storage of SGI. Prior to providing SGI to the requestor, the NRC staff will conduct (as necessary) an inspection to confirm that the recipient's information protection system is sufficient to satisfy the requirements of 10 CFR 73.22. Alternatively, recipients may opt to view SGI at an approved SGI storage location rather than establish their own SGI protection program to meet SGI protection requirements.

I. Filing of Contentions. Any contentions in these proceedings that are based upon the information received as a result of the request made for SUNSI or SGI must be filed by the requestor no later than 25 days after receipt of (or access to) that information. However, if more than 25 days remain between the petitioner's receipt of (or access to) the information and the deadline for filing all other contentions (as established in the notice of hearing or opportunity for hearing), the petitioner may file its SUNSI or SGI contentions by that later deadline.

J. Review of Denials of Access.

(1) If the request for access to SUNSI or SGI is denied by the NRC staff either after a determination on standing and requisite need, or after a determination on trustworthiness and reliability, the NRC staff shall immediately notify the requestor in writing, briefly stating the reason or reasons for the denial.

(2) Before the Office of Administration makes a final adverse determination regarding the trustworthiness and reliability of the proposed recipient(s) for access to SGI, the Office of Administration, in accordance with 10 CFR 2.336(f)(1)(iii), must provide the proposed recipient(s) any records that were considered in the trustworthiness and reliability determination, including those required to be provided under 10 CFR 73.57(e)(1), so that the proposed recipient(s) have an opportunity to correct or explain the record.

(3) The requestor may challenge the NRC staff's adverse determination with respect to access to SUNSI or with respect to standing or need to know for SGI by filing a challenge within 5 days of receipt of that determination with: (a) The presiding officer designated in this proceeding; (b) if no presiding officer has been appointed, the Chief Administrative Judge, or if he or she is unavailable, another administrative judge, or an Administrative Law Judge with jurisdiction pursuant to 10 CFR 2.318(a); or (c) if another officer has been designated to rule on information access issues, with that officer.

(4) The requestor may challenge the Office of Administration's final adverse determination with respect to trustworthiness and reliability for access to SGI by filing a request for review in accordance with 10 CFR 2.336(f)(1)(iv).

(5) Further appeals of decisions under this paragraph must be made pursuant to 10 CFR 2.311.

K. Review of Grants of Access. A party other than the requestor may challenge an NRC staff determination granting access to SUNSI whose release would harm that party's interest independent of the proceeding. Such a challenge must be filed within 5 days of the notification by the NRC staff of its grant of access and must be filed with: (a) The presiding officer designated in this proceeding; (b) if no presiding officer has been appointed, the Chief Administrative Judge, or if he or she is unavailable, another administrative judge, or an Administrative Law Judge with jurisdiction pursuant to 10 CFR 2.318(a); or (c) if another officer has been designated to rule on information access issues, with that officer.

If challenges to the NRC staff determinations are filed, these procedures give way to the normal process for litigating disputes concerning access to information. The availability of interlocutory review by the Commission of orders ruling on such NRC staff determinations (whether granting or denying access) is governed by 10 CFR 2.311.[7]

L. The Commission expects that the NRC staff and presiding officers (and any other reviewing officers) will consider and resolve requests for access to SUNSI or SGI, and motions for protective orders, in a timely fashion in order to minimize any unnecessary delays in identifying those petitioners who have standing and who have propounded contentions meeting the specificity and basis requirements in 10 CFR part 2. The attachment to this Order summarizes the general target schedule for processing and resolving requests under these procedures.

It Is So Ordered.

Dated at Rockville, Maryland, this 6th of January 2020.

For the Nuclear Regulatory Commission.

Annette L. Vietti-Cook,

Secretary of the Commission.

ATTACHMENT 1—GENERAL TARGET SCHEDULE FOR PROCESSING AND RESOLVING REQUESTS FOR ACCESS TO SENSITIVE UNCLASSIFIED NON-SAFEGUARDS INFORMATION AND SAFEGUARDS INFORMATION IN THIS PROCEEDING

Day	Event/activity
0	Publication of **Federal Register** notice of hearing and opportunity to petition for leave to intervene, including order with instructions for access requests.
10	Deadline for submitting requests for access to Sensitive Unclassified Non-Safeguards Information (SUNSI) and/or Safeguards Information (SGI) with information: Supporting the standing of a potential party identified by name and address; describing the need for the information in order for the potential party to participate meaningfully in an adjudicatory proceeding; demonstrating that access should be granted (*e.g.,* showing technical competence for access to SGI); and, for SGI, including application fee for fingerprint/background check.
60	Deadline for submitting petition for intervention containing: (i) Demonstration of standing; (ii) all contentions whose formulation does not require access to SUNSI and/or SGI (+25 Answers to petition for intervention; +7 requestor/petitioner reply).

[6] Any motion for Protective Order or draft Non-Disclosure Agreement or Affidavit for SGI must be filed with the presiding officer or the Chief Administrative Judge if the presiding officer has not yet been designated, within 180 days of the deadline for the receipt of the written access request.

[7] Requestors should note that the filing requirements of the NRC's E-Filing Rule (72 FR 49139; August 28, 2007, as amended at 77 FR 46562; August 3, 2012) apply to appeals of NRC staff determinations (because they must be served on a presiding officer or the Commission, as applicable), but not to the initial SUNSI/SGI request submitted to the NRC staff under these procedures.

ATTACHMENT 1—GENERAL TARGET SCHEDULE FOR PROCESSING AND RESOLVING REQUESTS FOR ACCESS TO SENSITIVE UNCLASSIFIED NON-SAFEGUARDS INFORMATION AND SAFEGUARDS INFORMATION IN THIS PROCEEDING—Continued

Day	Event/activity
20	U.S. Nuclear Regulatory Commission (NRC) staff informs the requestor of the staff's determination whether the request for access provides a reasonable basis to believe standing can be established and shows (1) need for SUNSI or (2) need to know for SGI. (For SUNSI, NRC staff also informs any party to the proceeding whose interest independent of the proceeding would be harmed by the release of the information.) If NRC staff makes the finding of need for SUNSI and likelihood of standing, NRC staff begins document processing (preparation of redactions or review of redacted documents). If NRC staff makes the finding of need to know for SGI and likelihood of standing, NRC staff begins background check (including fingerprinting for a criminal history records check), information processing (preparation of redactions or review of redacted documents), and readiness inspections.
25	If NRC staff finds no "need," no "need to know," or no likelihood of standing, the deadline for requestor/petitioner to file a motion seeking a ruling to reverse the NRC staff's denial of access; NRC staff files copy of access determination with the presiding officer (or Chief Administrative Judge or other designated officer, as appropriate). If NRC staff finds "need" for SUNSI, the deadline for any party to the proceeding whose interest independent of the proceeding would be harmed by the release of the information to file a motion seeking a ruling to reverse the NRC staff's grant of access.
30	Deadline for NRC staff reply to motions to reverse NRC staff determination(s).
40	(Receipt +30) If NRC staff finds standing and need for SUNSI, deadline for NRC staff to complete information processing and file motion for Protective Order and draft Non-Disclosure Affidavit. Deadline for applicant/licensee to file Non-Disclosure Agreement for SUNSI.
190	(Receipt +180) If NRC staff finds standing, need to know for SGI, and trustworthiness and reliability, deadline for NRC staff to file motion for Protective Order and draft Non-disclosure Affidavit (or to make a determination that the proposed recipient of SGI is not trustworthy or reliable). Note: Before the Office of Administration makes a final adverse determination regarding access to SGI, the proposed recipient must be provided an opportunity to correct or explain information.
205	Deadline for petitioner to seek reversal of a final adverse NRC staff trustworthiness or reliability determination under 10 CFR 2.336(f)(1)(iv).
A	If access granted: Issuance of a decision by a presiding officer or other designated officer on motion for protective order for access to sensitive information (including schedule for providing access and submission of contentions) or decision reversing a final adverse determination by the NRC staff.
A + 3	Deadline for filing executed Non-Disclosure Affidavits. Access provided to SUNSI and/or SGI consistent with decision issuing the protective order.
A + 28	Deadline for submission of contentions whose development depends upon access to SUNSI and/or SGI. However, if more than 25 days remain between the petitioner's receipt of (or access to) the information and the deadline for filing all other contentions (as established in the notice of opportunity to request a hearing and petition for leave to intervene), the petitioner may file its SUNSI or SGI contentions by that later deadline.
A + 53	(Contention receipt +25) Answers to contentions whose development depends upon access to SUNSI and/or SGI.
A + 60	(Answer receipt +7) Petitioner/Intervenor reply to answers.
>A + 60	Decision on contention admission.

[FR Doc. 2020–00208 Filed 1–9–20; 8:45 a.m.]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 52–025 and 52–026; ASLBP No. 20–965–03–EA–BD01]

In The Matter of Southern Nuclear Operating Company; Vogtle Electric Generating Plant, Units 3 and 4; Establishment of Atomic Safety and Licensing Board

Pursuant to delegation by the Commission, *see* 37 FR 28710 (Dec. 29, 1972), and the Commission's regulations, *see, e.g.,* 10 CFR 2.104, 2.105, 2.300, 2.309, 2.313, 2.318, 2.321, notice is hereby given that an Atomic Safety and Licensing Board (Board) is being established to preside over the following proceeding:

SOUTHERN NUCLEAR OPERATING COMPANY

VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4

(Confirmatory Order Modifying License)

This Board is being established pursuant to a hearing request submitted by Leonard Sparks in response to a Confirmatory Order, EA–18–130 and EA–18–171, "In the Matter of Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Units 3 and 4," issued on November 20, 2019 by the NRC Office of Enforcement, and published in the **Federal Register**. *See* 84 FR 65426 (Nov. 27, 2019).

The Board is comprised of the following Administrative Judges:

E. Roy Hawkens, Chairman, Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001

Michael M. Gibson, Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001

Dr. Sue H. Abreu, Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001

All correspondence, documents, and other materials shall be filed in accordance with the NRC E-Filing rule. *See* 10 CFR 2.302.

Rockville, Maryland.

Dated: December 27, 2019.

Edward R. Hawkens,

Chief Administrative Judge, Atomic Safety and Licensing Board Panel.

[FR Doc. 2020–00228 Filed 1–9–20; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[NRC–2020–0001]

Sunshine Act Meetings

TIME AND DATE: Weeks of January 13, 20, 27, February 3, 10, 17, 2020.

PLACE: Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

STATUS: Public.

Week of January 13, 2020

There are no meetings scheduled for the week of January 13, 2020.

Week of January 20, 2020—Tentative

There are no meetings scheduled for the week of January 20, 2020.

Week of January 27, 2020—Tentative

Tuesday, January 28, 2020

9:00 a.m. Discussion of Medical Uses of Radioactive Materials (Public Meeting); (Contact: Lisa Dimmick: 301–415–0694)

This meeting will be webcast live at the Web address—*https://www.nrc.gov/.*

Week of February 3, 2020—Tentative

Thursday, February 6, 2020

9:00 a.m. Briefing on Advanced Reactors and New Reactor Topics (Public Meeting); (Contact: Luis Betancourt: 301–415–6146)

This meeting will be webcast live at the Web address—*https://www.nrc.gov/.*

Week of February 10, 2020—Tentative

There are no meetings scheduled for the week of February 10, 2020.

Week of February 17, 2020—Tentative

There are no meetings scheduled for the week of February 17, 2020.

CONTACT PERSON FOR MORE INFORMATION: For more information or to verify the status of meetings, contact Denise McGovern at 301–415–0681 or via email at *Denise.McGovern@nrc.gov.* The schedule for Commission meetings is subject to change on short notice.

The NRC Commission Meeting Schedule can be found on the internet at: *https://www.nrc.gov/public-involve/public-meetings/schedule.html.*

The NRC provides reasonable accommodation to individuals with disabilities where appropriate. If you need a reasonable accommodation to participate in these public meetings or need this meeting notice or the transcript or other information from the public meetings in another format (*e.g.,* braille, large print), please notify Anne Silk, NRC Disability Program Specialist, at 301–287–0745, by videophone at 240–428–3217, or by email at *Anne.Silk@nrc.gov.* Determinations on requests for reasonable accommodation will be made on a case-by-case basis.

Members of the public may request to receive this information electronically. If you would like to be added to the distribution, please contact the Nuclear Regulatory Commission, Office of the Secretary, Washington, DC 20555 (301–415–1969), or by email at *Wendy.Moore@nrc.gov* or *Tyesha.Bush@nrc.gov.*

The NRC is holding the meetings under the authority of the Government in the Sunshine Act, 5 U.S.C. 552b.

Dated at Rockville, Maryland, this 8th day of January 2020.

For the Nuclear Regulatory Commission.

Denise L. McGovern

Policy Coordinator, Office of the Secretary.

[FR Doc. 2020–00342 Filed 1–8–20; 4:15 pm]

BILLING CODE 7590–01–P

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–87897; File No. SR–MIAX–2019–53]

Self-Regulatory Organizations; Miami International Securities Exchange LLC; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Amend Its Fee Schedule

January 6, 2020.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on December 30, 2019, Miami International Securities Exchange LLC (''MIAX Options'' or ''Exchange'') filed with the Securities and Exchange Commission (''SEC'' or ''Commission'') the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the Exchange. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange is filing a proposal to amend the MIAX Options Fee Schedule (the ''Fee Schedule'') to extend the waiver period for certain non-transaction fees applicable to Market Makers[3] that trade solely in Proprietary Products[4] until June 30, 2020.

The text of the proposed rule change is available on the Exchange's website at *http://www.miaxoptions.com/rule-filings,* at MIAX's principal office, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

Background

On October 12, 2018, the Exchange received approval from the Commission to list and trade on the Exchange, options on the SPIKES® Index, a new index that measures expected 30-day volatility of the SPDR S&P 500 ETF Trust (commonly known and referred to by its ticker symbol, ''SPY'').[5] The Exchange adopted its initial SPIKES transaction fees on February 15, 2019.[6]

On May 31, 2019, the Exchange filed a proposal with the Commission to amend the Fee Schedule to waive certain non-transaction fees applicable to Market Makers that trade solely in Proprietary Products (including options on the SPIKES Index) until September

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] The term ''Market Makers'' refers to ''Lead Market Makers'', ''Primary Lead Market Makers'' and ''Registered Market Makers'' collectively. *See* Exchange Rule 100.

[4] The term ''Proprietary Product'' means a class of options that is listed exclusively on the Exchange. *See* Exchange Rule 100.

[5] *See* Securities Exchange Act Release No. 84417 (October 12, 2018), 83 FR 52865 (October 18, 2018) (SR–MIAX–2018–14) (Order Granting Approval of a Proposed Rule Change by Miami International Securities Exchange, LLC to List and Trade on the Exchange Options on the SPIKES® Index).

[6] *See* Securities Exchange Release No. 85283 (March 11, 2019), 84 FR 9567 (March 15, 2019) (SR–MIAX–2019–11). The Exchange initially filed the proposal on February 15, 2019 (SR–MIAX–2019–04). That filing was withdrawn and replaced with (SR–MIAX–2019–11).

30, 2019.[7] In particular, the Exchange adopted waivers for Membership Application fees, monthly Market Maker Trading Permit fees, Application Programming Interface (''API'') Testing and Certification fees for Members, and monthly MEI Port fees assessed to Market Makers that trade solely in Proprietary Products (including options on SPIKES) until September 30, 2019.

On October 1, 2019, the Exchange filed a proposal with the Commission to extend the waiver period for the same non-transaction fees applicable to Market Makers that trade solely in Proprietary Products (including options on SPIKES) until December 31, 2019.[8]

Proposal

The Exchange now proposes to extend the waiver period for the same non-transaction fees applicable to Market Makers that trade solely in Proprietary Products (including options on SPIKES) until June 30, 2020. In particular, the Exchange proposes to waive Membership Application fees, monthly Market Maker Trading Permit fees, Member API Testing and Certification fees, and monthly MEI Port fees assessed to Market Makers that trade solely in Proprietary Products (including options on SPIKES) until June 30, 2020.

Membership Application Fees

The Exchange currently assesses Membership fees for applications of potential Members. The Exchange assesses a one-time Membership Application fee on the earlier of (i) the date the applicant is certified in the membership system, or (ii) once an application for MIAX membership is finally denied. The one-time application fee is based upon the applicant's status as either a Market Maker or an Electronic Exchange Member (''EEM'').[9] A Market Maker is assessed a one-time Membership Application fee of $3,000.00.

The Exchange proposes that the waiver for the one-time Membership Application fee of $3,000.00 for Market Makers that trade solely in Proprietary Products (including options on SPIKES) will be extended from December 31, 2019 until June 30, 2020, which the Exchange proposes to state in the Fee Schedule. The purpose of this proposed change is to continue to provide an incentive for potential Market Makers to submit membership applications, which should result in increasing potential liquidity in Proprietary Products, including options on SPIKES. Even though the Exchange is proposing to extend the waiver of this particular fee for Market Makers who will trade solely in Proprietary Products from December 31, 2019 until June 30, 2020, the overall structure of the fee is outlined in the Fee Schedule so that there is general awareness that the Exchange intends to assess such a fee after June 30, 2020.

Trading Permit Fees

The Exchange issues Trading Permits that confer the ability to transact on the Exchange. MIAX Trading Permits are issued to Market Makers and EEMs. Members receiving Trading Permits during a particular calendar month are assessed monthly Trading Permit fees as set forth in the Fee Schedule. As it relates to Market Makers, MIAX currently assesses a monthly Trading Permit fee in any month the Market Maker is certified in the membership system, is credentialed to use one or more MIAX Express Interface Ports (''MEI Ports'')[10] in the production environment and is assigned to quote in one or more classes. MIAX assesses its Market Makers the monthly Market Maker Trading Permit fee based on the greatest number of classes listed on MIAX that the MIAX Market Maker was assigned to quote in on any given day within a calendar month and the applicable fee rate is the lesser of either the per class basis or percentage of total national average daily volume measurements. A MIAX Market Maker is assessed a monthly Trading Permit Fee according to the following table:

Type of Trading Permit	Monthly MIAX Trading Permit Fee	Market Maker assignments (the lesser of the applicable measurements below) Ω	
		Per class	% of national average daily volume
Market Maker (includes RMM, LMM, PLMM).	$7,000.00	Up to 10 Classes	Up to 20% of Classes by volume.
	12,000.00	Up to 40 Classes	Up to 35% of Classes by volume.
	*17,000.00	Up to 100 Classes	Up to 50% of Classes by volume.
	*22,000.00	Over 100 Classes	Over 50% of Classes by volume up to all Classes listed on MIAX.

Ω Excludes Proprietary Products.

*For these Monthly MIAX Trading Permit Fee levels, if the Market Maker's total monthly executed volume during the relevant month is less than 0.060% of the total monthly executed volume reported by OCC in the market maker account type for MIAX-listed option classes for that month, then the fee will be $15,500 instead of the fee otherwise applicable to such level.

MIAX proposes that the waiver for the monthly Trading Permit fee for Market Makers that trade solely in Proprietary Products (including options on SPIKES) will be extended from December 31, 2019 to June 30, 2020, which the Exchange proposes to state in the Fee Schedule. The purpose of this proposed change is to continue to provide an incentive for Market Makers to provide liquidity in Proprietary Products on the Exchange, which should result in increasing potential order flow and volume in Proprietary Products, including options on SPIKES. Even though the Exchange is proposing to extend the waiver of this particular fee for Market Makers trading solely in Proprietary Products from December 31, 2019 until June 30, 2020, the overall structure of the fee is outlined in the Fee Schedule so that there is general awareness by potential Members seeking a Trading Permit on the Exchange that the Exchange intends to assess such a fee after June 30, 2020.

[7] *See* Securities Exchange Act Release No. 86109 (June 14, 2019), 84 FR 28860 (June 20, 2019) (SR–MIAX–2019–28).

[8] *See* Securities Exchange Act Release No. 87282 (October 10, 2019), 84 FR 55658 (October 17, 2019) (SR–MIAX–2019–43).

[9] The term ''Electronic Exchange Member'' or ''EEM'' means the holder of a Trading Permit who is not a Market Maker. Electronic Exchange Members are deemed ''members'' under the Exchange Act. *See* Exchange Rule 100.

[10] Full Service MEI Ports provide Market Makers with the ability to send Market Maker simple and complex quotes, eQuotes, and quote purge messages to the MIAX System. Full Service MEI Ports are also capable of receiving administrative information. Market Makers are limited to two Full Service MEI Ports per matching engine. *See* Fee Schedule, note 27.

The Exchange also proposes that Market Makers who trade Proprietary Products (including options on SPIKES) along with multi-listed classes will continue to not have Proprietary Products (including SPIKES) counted toward those Market Makers' class assignment count or percentage of total national average daily volume. This exclusion is noted with the symbol ''Ω'' following the table that shows the monthly Trading Permit Fees currently assessed for Market Makers in Section 3)b) of the Fee Schedule.

API Testing and Certification Fee

The Exchange assesses an API Testing and Certification fee to all Members depending upon the type of Member. An API makes it possible for Members' software to communicate with MIAX software applications, and is subject to Members testing with, and certification by, MIAX. The Exchange offers four types of interfaces: (i) The Financial Information Exchange Port (''FIX Port''),[11] which enables the FIX Port user (typically an EEM or a Market Maker) to submit simple and complex orders electronically to MIAX; (ii) the MEI Port, which enables Market Makers to submit simple and complex electronic quotes to MIAX; (iii) the Clearing Trade Drop Port (''CTD Port''),[12] which provides real-time trade clearing information to the participants to a trade on MIAX and to the participants' respective clearing firms; and (iv) the FIX Drop Copy Port (''FXD Port''),[13] which provides a copy of real-time trade execution, correction and cancellation information through a FIX Port to any number of FIX Ports designated by an EEM to receive such messages.

API Testing and Certification fees for Market Makers are assessed (i) initially per API for CTD and MEI in the month the Market Maker has been credentialed to use one or more ports in the production environment for the tested API and the Market Maker has been assigned to quote in one or more classes, and (ii) each time a Market Maker initiates a change to its system that requires testing and certification. API Testing and Certification fees will not be assessed in situations where the Exchange initiates a mandatory change to the Exchange's system that requires testing and certification. The Exchange currently assesses a Market Maker an API Testing and Certification fee of $2,500.00. The API Testing and Certification fees represent costs incurred by the Exchange as it works with each Member for testing and certifying that the Member's software systems communicate properly with MIAX's interfaces.

MIAX proposes to extend the waiver of the API Testing and Certification fee for Market Makers that trade solely in Proprietary Products (including options on SPIKES) from December 31, 2019 until June 30, 2020, which the Exchange proposes to state in the Fee Schedule. The purpose of this proposed change is to continue to provide an incentive for potential Market Makers to develop software applications to trade in Proprietary Products, including options on SPIKES. Even though the Exchange is proposing to extend the waiver of this particular fee for Market Makers who trade solely in Proprietary Products from December 31, 2019 until June 30, 2020, the overall structure of the fee is outlined in the Fee Schedule so that there is general awareness that the Exchange intends to assess such a fee after June 30, 2020.

MEI Port Fees

MIAX provides four (4) Port types, including (i) the FIX Port, which enables the FIX Port user (typically an EEM or a Market Maker) to submit simple and complex orders electronically to MIAX; (ii) the MEI Port, which enables Market Makers to submit simple and complex electronic quotes to MIAX; (iii) the CTD Port, which provides real-time trade clearing information to the participants to a trade on MIAX and to the participants' respective clearing firms; and (iv) the FXD Port, which provides a copy of real-time trade execution, correction and cancellation information through a FIX Port to any number of FIX Ports designated by an EEM to receive such messages.

MIAX assesses monthly MEI Port Fees to Market Makers in each month the Member has been credentialed to use the MEI Port in the production environment and has been assigned to quote in at least one class. The amount of the monthly MEI Port Fee is based upon the number of classes in which the Market Maker was assigned to quote on any given day within the calendar month, and upon the class volume percentages set forth in the above table. The class volume percentage is based on the total national average daily volume in classes listed on MIAX in the prior calendar quarter. Newly listed option classes are excluded from the calculation of the monthly MEI Port Fee until the calendar quarter following their listing, at which time the newly listed option classes will be included in both the per class count and the percentage of total national average daily volume. The Exchange assesses MIAX Market Makers the monthly MEI Port Fee based on the greatest number of classes listed on MIAX that the MIAX Market Maker was assigned to quote in on any given day within a calendar month and the applicable fee rate that is the lesser of either the per class basis or percentage of total national average daily volume measurement. MIAX assesses MEI Port Fees on Market Makers according to the following table:

Monthly MIAX MEI Fees	Market Maker assignments (the lesser of the applicable measurements below) Ω	
	Per class	% of national average daily volume
$5,000.00	Up to 5 Classes	Up to 10% of Classes by volume.
10,000.00	Up to 10 Classes	Up to 20% of Classes by volume.
14,000.00	Up to 40 Classes	Up to 35% of Classes by volume.

[11] A FIX Port is an interface with MIAX systems that enables the Port user (typically an Electronic Exchange Member or a Market Maker) to submit simple and complex orders electronically to MIAX. *See* Fee Schedule, note 24.

[12] Clearing Trade Drop (''CTD'') provides Exchange members with real-time clearing trade updates. The updates include the Member's clearing trade messages on a low latency, real-time basis. The trade messages are routed to a Member's connection containing certain information. The information includes, among other things, the following: (i) Trade date and time; (ii) symbol information; (iii) trade price/size information; (iv) Member type (for example, and without limitation, Market Maker, Electronic Exchange Member, Broker-Dealer); (v) Exchange Member Participant Identifier (''MPID'') for each side of the transaction, including Clearing Member MPID; and (vi) strategy specific information for complex transactions. CTD Port Fees will be assessed in any month the Member is credentialed to use the CTD Port in the production environment. *See* Fee Schedule, Section 5)d)iii.

[13] The FIX Drop Copy Port (''FXD'') is a messaging interface that will provide a copy of real-time trade execution, trade correction and trade cancellation information for simple and complex orders to FIX Drop Copy Port users who subscribe to the service. FIX Drop Copy Port users are those users who are designated by an EEM to receive the information and the information is restricted for use by the EEM only. FXD Port Fees will be assessed in any month the Member is credentialed to use the FXD Port in the production environment. *See* Fee Schedule, Section 5)d)iv.

Monthly MIAX MEI Fees	Market Maker assignments (the lesser of the applicable measurements below) Ω	
	Per class	% of national average daily volume
17,500.00 *	Up to 100 Classes	Up to 50% of Classes by volume.
20,500.00 *	Over 100 Classes	Over 50% of Classes by volume up to all Classes listed on MIAX.

Ω Excludes Proprietary Products.
* For these Monthly MIAX MEI Fees levels, if the Market Maker's total monthly executed volume during the relevant month is less than 0.060% of the total monthly executed volume reported by OCC in the market maker account type for MIAX-listed option classes for that month, then the fee will be $14,500 instead of the fee otherwise applicable to such level.

MIAX proposes to extend the waiver of the monthly MEI Port Fee for Market Makers that trade solely in Proprietary Products (including options on SPIKES) from December 31, 2019 until June 30, 2020, which the Exchange proposes to state in the Fee Schedule. The purpose of this proposal is to continue to provide an incentive to Market Makers to connect to MIAX through the MEI Port such that they will be able to trade in MIAX Proprietary Products. Even though the Exchange is proposing to extend the waiver of this particular fee for Market Makers trading solely in Proprietary Products until June 30, 2020, the overall structure of the fee is outlined in the Fee Schedule so that there is general awareness that the Exchange intends to assess such a fee after June 30, 2020.

The Exchange notes that for the purposes of this proposed change, other Market Makers who trade MIAX Proprietary Products (including options on SPIKES) along with multi-listed classes will continue to not have Proprietary Products (including SPIKES) counted toward those Market Makers' class assignment count or percentage of total national average daily volume. This exclusion is noted by the symbol ''Ω'' following the table that shows the monthly MEI Port Fees currently assessed for Market Makers in Section 5)d)ii) of the Fee Schedule.

The proposed extension of the fee waivers are targeted at market participants, particularly market makers, who are not currently members of MIAX, who may be interested in being a Market Maker in Proprietary Products on the Exchange. The Exchange estimates that there are fewer than ten (10) such market participants that could benefit from the extension of these fee waivers. The proposed extension of the fee waivers does not apply differently to different sizes of market participants, however the fee waivers do only apply to Market Makers (and not EEMs).

Market Makers, unlike other market participants, take on a number of obligations, including quoting obligations that other market participants do not have. Further, Market Makers have added market making and regulatory requirements, which normally do not apply to other market participants. For example, Market Makers have obligations to maintain continuous markets, engage in a course of dealings reasonably calculated to contribute to the maintenance of a fair and orderly market, and to not make bids or offers or enter into transactions that are inconsistent with a course of dealing. Accordingly, the Exchange believes it is reasonable and not unfairly discriminatory to continue to offer the fee waivers to Market Makers because the Exchange is seeking additional liquidity providers for Proprietary Products, in order to enhance liquidity and spreads in Proprietary Products, which is traditionally provided by Market Makers, as opposed to EEMs.

2. Statutory Basis

The Exchange believes that its proposal to amend its Fee Schedule is consistent with Section 6(b) of the Act [14] in general, and furthers the objectives of Section 6(b)(4) of the Act [15] in particular, in that it is an equitable allocation of reasonable fees and other charges among its members and issuers and other persons using its facilities. The Exchange also believes the proposal furthers the objectives of Section 6(b)(5) of the Act in that it is designed to promote just and equitable principles of trade, to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general to protect investors and the public interest and is not designed to permit unfair discrimination between customers, issuers, brokers and dealers.

The Exchange believes that the proposal to extend the fee waiver period for certain non-transaction fees for Market Makers in Proprietary Products is an equitable allocation of reasonable fees because the proposal continues to waive non-transaction fees for a limited period of time in order to enable the Exchange to improve its overall competitiveness and strengthen its market quality for all market participants in MIAX's Proprietary Products, including options on SPIKES. The Exchange believe the proposed extension of the fee waivers is fair and equitable and not unreasonably discriminatory because it applies to all market participants not currently registered as Market Makers at the Exchange. Any market participant may choose to satisfy the additional requirements and obligations of being a Market Maker and trade solely in Proprietary Products in order to qualify for the fee waivers.

The Exchange believes that the proposed extension of the fee waivers is equitable and not unfairly discriminatory for Market Makers as compared to EEMs because Market Makers, unlike other market participants, take on a number of obligations, including quoting obligations that other market participants do not have. Further, Market Makers have added market making and regulatory requirements, which normally do not apply to other market participants. For example, Market Makers have obligations to maintain continuous markets, engage in a course of dealings reasonably calculated to contribute to the maintenance of a fair and orderly market, and to not make bids or offers or enter into transactions that are inconsistent with a course of dealing.

The Exchange believes it is reasonable and equitable to continue to waive the one-time Membership Application Fee, monthly Trading Permit Fee, API Testing and Certification Fee, and monthly MEI Port Fee for Market Makers that trade solely in Proprietary Products (including options on SPIKES) until June 30, 2020, since the waiver of such fees provides incentives to interested market participants to trade in Proprietary Products. This should result in increasing potential order flow and liquidity in MIAX Proprietary Products, including options on SPIKES.

The Exchange believes it is reasonable and equitable to continue to waive the API Testing and Certification fee assessable to Market Makers that trade

[14] 15 U.S.C. 78f(b).
[15] 15 U.S.C. 78f(b)(4) and (5).

solely in Proprietary Products (including options on SPIKES) until June 30, 2020, since the waiver of such fees provides incentives to interested Members to develop and test their APIs sooner. Determining system operability with the Exchange's system will in turn provide MIAX with potential order flow and liquidity providers in Proprietary Products.

The Exchange believes it is reasonable, equitable and not unfairly discriminatory that Market Makers who trade in Proprietary Products along with multi-listed classes will continue to not have Proprietary Products counted toward those Market Makers' class assignment count or percentage of total national average daily volume for monthly Trading Permit Fees and monthly MEI Port Fees in order to incentivize existing Market Makers who currently trade in multi-listed classes to also trade in Proprietary Products, without incurring certain additional fees.

The Exchange believes that the proposed extension of the fee waivers constitutes an equitable allocation of reasonable fees and other charges among its members and issuers and other persons using its facilities. The proposed extension of the fee waivers means that all prospective market makers that wish to become Market Maker Members of the Exchange and quote solely in Proprietary Products may do so and have the above-mentioned fees waived until June 30, 2020. The proposed extension of the fee waivers will continue to not apply to potential EEMs because the Exchange is seeking to enhance the quality of its markets in Proprietary Products through introducing more competition among Market Makers in Proprietary Products. In order to increase the competition, the Exchange believes that it must continue to waive entry type fees for such Market Makers. EEMs do not provide the benefit of enhanced liquidity which is provided by Market Makers, therefore the Exchange believes it is reasonable and not unfairly discriminatory to continue to only offer the proposed fee waivers to Market Makers (and not EEMs). Further, the Exchange believes it is reasonable and not unfairly discriminatory to continue to exclude Proprietary Products from an existing Market Maker's permit fees and port fees, in order to incentive such Market Makers to quote in Proprietary Products. The amount of a Market Maker's permit and port fee is determined by the number of classes quoted and volume of the Market Maker. By excluding Proprietary Products from such fees, the Exchange is able to incentivize Market Makers to quote in Proprietary Products. EEMs do not pay permit and port fees based on the classes traded or volume, so the Exchange believes it is reasonable, equitable, and not unfairly discriminatory to only offer the exclusion to Market Makers (and not EEMs).

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule change will impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act.

Intra-Market Competition

The Exchange believes that the proposal to extend certain of the non-transaction fee waivers until June 30, 2020 for Market Makers in Proprietary Products would increase intra-market competition by incentivizing new potential Market Makers to quote in Proprietary Products, which will enhance the quality of quoting and increase the volume of contracts in Proprietary Products traded on MIAX. To the extent that this purpose is achieved, all the Exchange's market participants should benefit from the improved market liquidity for the Exchange's Proprietary Products. Enhanced market quality and increased transaction volume in Proprietary Products that results from the anticipated increase in Market Maker activity on the Exchange will benefit all market participants and improve competition on the Exchange.

The Exchange does not believe that the proposed rule change will impose any burden on intra-market competition that is not necessary or appropriate in furtherance of the purposes of the Act because the proposed changes for each separate type of market participant (new Market Makers and existing Market Makers) will be assessed equally to all such market participants. While different fees are assessed to different market participants in some circumstances, these different market participants have different obligations and different circumstances as discussed above. For example, Market Makers have quoting obligations that other market participants (such as EEMs) do not have.

Inter-Market Competition

The Exchange does not believe that the proposed rule change will impose any burden on inter-market competition that is not necessary or appropriate in furtherance of the purposes of the Act because the proposed extension of the fee waivers apply only to the Exchange's Proprietary Products (including options on SPIKES), which are traded exclusively on the Exchange.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

Written comments were neither solicited nor received.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

The foregoing rule change has become effective pursuant to Section 19(b)(3)(A)(ii) of the Act,[16] and Rule 19b–4(f)(2) [17] thereunder. At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–MIAX–2019–53 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090.

All submissions should refer to File Number SR–MIAX–2019–53. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements

[16] 15 U.S.C. 78s(b)(3)(A)(ii).

[17] 17 CFR 240.19b–4(f)(2).

with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change. Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–MIAX–2019–53, and should be submitted on or before January 31, 2020.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[18]

J. Matthew DeLesDernier,

Assistant Secretary.

[FR Doc. 2020–00204 Filed 1–9–20; 8:45 am]

BILLING CODE 8011–01–P

[18] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–87891; File No. SR–CboeEDGX–2019–077]

Self-Regulatory Organizations; Cboe EDGX Exchange, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Amend the Opening Triggers for Its Opening Rotation Process for Equity Options

January 6, 2020.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the ''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on December 23, 2019, Cboe EDGX Exchange, Inc. (the ''Exchange'' or ''EDGX'') filed with the Securities and Exchange Commission (the ''Commission'') the proposed rule change as described in Items I and II below, which Items have been prepared by the Exchange. The Exchange filed the proposal as a ''non-controversial'' proposed rule change pursuant to Section 19(b)(3)(A)(iii) of the Act[3] and Rule 19b–4(f)(6) thereunder.[4] The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] 15 U.S.C. 78s(b)(3)(A)(iii).

[4] 17 CFR 240.19b–4(f)(6).

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange proposes to amend Rule 21.7 (Opening Auction Process) in connection with the opening triggers for its opening rotation process for the Regular Trading Hours (''RTH'') trading session in equity options.

The text of the proposed rule change is also available on the Exchange's website (*http://markets.cboe.com/us/options/regulation/rule_filings/edgx/*), at the Exchange's Office of the Secretary, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

The Exchange proposes to amend Rule 21.7 (Opening Auction Process) in connection with the opening triggers for its opening rotation process for the Regular Trading Hours (''RTH'') trading session in equity options. Currently, Rule 21.7(d)(1) governs the RTH opening rotation triggers for equity options, as well as index options. Particularly, regarding equity options, Rule 21.7(d)(1) provides that the System[5] will initiate the opening rotation after a time period (which the Exchange determines for all classes) following the System's observation after 9:30 a.m. of the first disseminated transaction on the primary listing market in the security underlying an equity option. In order to ensure a more orderly opening process, the Exchange proposes to amend the opening trigger process in order to contemplate the first disseminated quote (in addition to the already included first disseminated transaction) on the primary listing market in the underlying security in determining whether to initiate the opening rotation, as well as to add an additional timing process following the System's observation of one, but not both, of the opening triggers.

Specifically, the Exchange proposes to include the System's observation of the first disseminated quote on the primary market in the security underlying the equity options as an additional opening trigger for equity options.[6] The Exchange notes this trigger is intended to tie the Exchange's opening process to quoting in the underlying security. The Exchange believes that quoting activity in the underlying market is an additional trigger that generally indicates the presence of post-open price discovery and liquidity in the primary market for the underlying, and, therefore, that the market for the underlying is adequately situated for the commencement of options trading on the underlying. This additional trigger is also consistent with general practice in the industry, as other options exchanges use the first disseminated quote, as well as first disseminated transaction, as an opening trigger for their opening auction processes.[7] As a result, the proposed additional trigger is an industry practice to which market participants are generally already accustomed and will provide for greater consistency in the opening process across the industry. In light of this additional opening trigger, the Exchange also proposes to adopt additional timing specifications prior to the initiation of the opening rotation and contingent upon the System's observation of the first disseminated transaction and/or quote, as proposed, on the primary market in the underlying security. Specifically, under proposed Rule 21.7(d)(1)(A),[8] the System would

[5] *See* EDGX Options Rule 16.1, which defines the ''System'' or ''Trading System'' to mean the automated trading system used by EDGX Options for the trading of options contracts.

[6] The quote must be a two-sided quote.

[7] *See* Nasdaq PHLX LLC (''PHLX'') Rule 1017(d)(i); Nasdaq ISE LLC (''ISE'') Options 3 Section 8(c)(1); Nasdaq GEMX LLC (''GEMX'') Options 3 Section 8(c)(1); Nasdaq MRX LLC (''MRX'') Options 3 Section 8(c)(1); Miami International Securities Exchange, LLC (''MIAX'') Rule 503(e); NYSE American, Inc. (''NYSE American'') Rule 952NY; and NYSE Arca, Inc. (''NYSE Arca'') Rule 6.64–O(b).

[8] The Exchange also proposes to format current Rule 21.7(d)(1) into two subparagraphs; subparagraph (d)(1)(A), governing the RTH opening rotation triggers for equity options, and subparagraph (d)(1)(B), governing such for index options. This proposed formatting change will make

Continued

initiate the opening rotation after an Exchange-determined time period (which it currently does) upon the earlier occurrence of either: (i) The passage of two minutes (or such shorter time as determined by the Exchange) after the System's observation after 9:30 a.m. of either the first disseminated transaction or the first disseminated quote on the primary listing market in the security underlying an equity option; or (ii) the System's observation after 9:30 a.m. of both the first disseminated transaction and the first disseminated quote on the primary listing market in the security underlying an equity option.

The proposed additional timing steps in connection with the opening triggers are intended to ensure that the market for the underlying security has had sufficient time to open prior to the initiation of the opening rotation where there is not both a two-sided quote and an execution in the underlying security. By waiting a requisite amount of time after the System observes one of the opening triggers, the proposed process pursuant to proposed Rule 21.7(d)(1)(A)(i) is intended to permit post-opening price discovery to occur in the underlying security prior to the opening of options on the security. Similarly, by initiating the opening rotation upon the System's observation of both opening triggers prior to the passage of two minutes, proposed Rule 21.7(d)(1)(A)(ii) ties the Exchange's opening process to specific market conditions in the underlying security that generally indicate that sufficient post-opening price discovery has occurred prior to the opening of options on the security. To illustrate, if the System were to observe a disseminated quote (or transaction) in the primary market for the underlying security, it would begin the two-minute (or shorter) timer pursuant to proposed Rule 21.7(d)(1)(A)(i). If two minutes then passed without the System's observation of a disseminated transaction (or quote) on the primary market for the underlying security (which would cause the scenario in Rule 21.7(d)(1)(A)(ii) to occur) then it would initiate the opening rotation after a time period determined by the Exchange, as it currently does today. Conversely, if the System were to observe a disseminated quote (or transaction) in the primary listing market and begin the two minute (or shorter) timer, but then observe a disseminated transaction (or quote) in the primary listing market before the passage of two minutes (or shorter), it would then, at the time it observed the disseminated transaction (or quote) prior to the passage of two minutes (or shorter), initiate the opening rotation after a period of time determined by the Exchange.

The Exchange notes that the proposed rule change in connection with initiating the opening rotation upon receipt of a trade and a quote in the underlying is consistent with the opening process rules of NYSE Arca.[9] Additionally, the proposed rule change in connection with initiating the opening rotation following the receipt of either a quote or trade in the underlying and a timed pause is consistent with other options exchanges that have similar timers in place following the receipt of a transaction or quote in the primary market for the underlying security. For example, MIAX's opening process rule currently provides that its opening process may begin following a pause period (no longer than one half second) that, like the proposed rule change, begins upon the dissemination of either a quote or a trade in the underlying security.[10] The Exchange notes that the MIAX opening process rule provides that following the dissemination of either a quote or a trade in the underlying security and the requisite pause period, its opening process will begin upon the occurrence of certain Market Maker quotes submitted on MIAX. The Exchange notes, however, that this is not consequential to the activity or status of the market for the underlying security or the use of an opening quote or trade in the underlying to trigger the initiation of an opening process on an options exchange. The Exchange further notes that the proposed two minute timer (or shorter) is consistent with the timer provided pursuant to the opening process rules on PHLX, ISE, GEMX, and MRX.[11]

2. Statutory Basis

The Exchange believes the proposed rule change is consistent with the Securities Exchange Act of 1934 (the ''Act'') and the rules and regulations thereunder applicable to the Exchange and, in particular, the requirements of Section 6(b) of the Act.[12] Specifically, the Exchange believes the proposed rule change is consistent with the Section 6(b)(5)[13] requirements that the rules of an exchange be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities, to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest. Additionally, the Exchange believes the proposed rule change is consistent with the Section 6(b)(5)[14] requirement that the rules of an exchange not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

The Exchange believes that the proposed rule change to include the first dissemination of a quote on the primary market for the underlying security as an additional opening trigger for equity options would serve to remove impediments to and perfect the mechanism of a free and open market and national market system by incorporating an additional opening trigger into the Exchange's opening process which would help ensure that the primary market for the underlying is adequately situated with the appropriate liquidity and active price discovery in order to open for trading options on the underlying. Additionally, the proposed rule change would foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities because it will align the triggers for its equity options opening rotation with the triggers used by most other options exchanges.[15] The proposed change will benefit investors, as it will create consistency throughout the industry by implementing an additional opening rotation trigger already in place across much of the industry and, thus, already familiar to market participants.

In addition to this, the Exchange believes that the proposed rule change to implement additional timing procedures in connection with the System's observation of the first disseminated transaction and/or quote in the primary market for the underlying security prior to the initiation of the opening rotation would also serve to remove impediments to and perfect the mechanism of a free and open market

the rule better organized and easier to follow and understand.

[9] *See* NYSE Arca Rule 6.64–O(b).

[10] *See* MIAX Rule 503(e).

[11] *See* PHLX Options Rule 1017(d)(i); ISE Options 3 Section 8(c)(1); GEMX Options 3 Section 8(c)(1); and MRX Options 3 Section 8(c)(1), each of which begin their opening processes within two minutes (or such shorter time as determined by the Exchange) of the opening trade or quote on the market for the underlying security in the case of equity options (plus the occurrence of another condition as laid out in the exchanges' rules).

[12] 15 U.S.C. 78f(b).

[13] 15 U.S.C. 78f(b)(5).

[14] *Id.*

[15] *See supra* note 3 [sic].

and national market system by ensuring that stability is present in the underlying markets upon the initiation of the opening rotation to the benefits of investors. The proposed rule change is intended to promote the maintenance of a fair and orderly market and, in general, to protect investors and the public interest by either waiting a requisite amount of time after the System observes one opening trigger in order to allocate enough time to permit the price of the underlying security to stabilize after its opening, or by initiating the opening rotation upon the System's observation of both opening triggers (as proposed), thus tying the Exchange's open to the existence of liquidity on the primary market which generally indicates that sufficient post-opening price discovery has occurred prior to the opening of options on the underlying security. Additionally, the Exchange does not believe that the proposed rule change in connection with initiating trading on the Exchange when the System observes a quote and a trade in the underlying security, or observes either a quote or a trade in the underlying security followed by a pause, which, as proposed would be two minutes (or shorter) would significantly impact investors or the public interest because, as stated, these conditions are consistent with other options exchanges that have substantively the same conditions in place in connection with their opening processes.[16]

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed changes would impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act. The Exchange does not believe that the proposed rule changes would impose any burden on intramarket competition that is not necessary in furtherance of the purposes of the Act, because the proposed additional opening trigger and steps in the opening trigger process would apply in the same manner to all equity options. The proposed rule change impacts a System process that occurs prior to the opening of trading, and merely modifies when the System will initiate an opening rotation. The Exchange also does not believe that the proposed change would impose any burden on intermarket competition that is not necessary in furtherance of the purposes of the Act, because use of the first disseminated quote from the primary market as a trigger for the opening rotation, as well as the combination of both opening triggers, or of one opening trigger plus a pause period of a two minutes (or shorter) prior to initiating the opening rotation, is consistent with the rules of other options exchanges.[17]

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

The Exchange neither solicited nor received comments on the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the proposed rule change does not: (i) Significantly affect the protection of investors or the public interest; (ii) Impose any significant burden on competition; and (iii) become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to Section 19(b)(3)(A) of the Act[18] and subparagraph (f)(6) of Rule 19b–4 thereunder.[19]

A proposed rule change filed pursuant to Rule 19b–4(f)(6) under the Act[20] normally does not become operative for 30 days after the date of its filing. However, Rule 19b–4(f)(6)(iii)[21] permits the Commission to designate a shorter time if such action is consistent with the protection of investors and the public interest. The Exchange has asked the Commission to waive the 30-day operative delay so that the proposal may become operative upon filing. The Exchange states that the waiver of the operative delay would serve to sooner protect investors by implementing an additional opening trigger and additional timing steps in the Exchange's opening process. Based on the Exchange's representations, the Commission believes that waiver of the 30-day operative delay is consistent with the protection of investors and the public interest. Therefore, the Commission hereby waives the operative delay and designates the proposed rule change operative upon filing.[22]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule change should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–CboeEDGX–2019–077 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090.

All submissions should refer to File Number SR–CboeEDGX–2019–077. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE,

[16] *See supra* notes 3, 5, 6, and 7 [sic].

[17] *See id.*

[18] 15 U.S.C. 78s(b)(3)(A).

[19] 17 CFR 240.19b–4(f)(6). In addition, Rule19b–4(f)(6)(iii) requires a self-regulatory organization to give the Commission written notice of its intent to file the proposed rule change, along with a brief description and text of the proposed rule change, at least five business days prior to the date of filing of the proposed rule change, or such shorter time as designated by the Commission. The Exchange has satisfied this requirement.

[20] 17 CFR 240.19b–4(f)(6).

[21] 17 CFR 240.19b–4(f)(6)(iii).

[22] For purposes only of waiving the 30-day operative delay, the Commission also has considered the proposed rule's impact on efficiency, competition, and capital formation. *See* 15 U.S.C. 78c(f).

Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change. Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number *SR–CboeEDGX–2019–077* and should be submitted on or before January 31, 2020.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[23]

J. Matthew DeLesDernier,

Assistant Secretary.

[FR Doc. 2020–00200 Filed 1–9–20; 8:45 am]

BILLING CODE 8011–01–P

[23] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–87896; File No. SR–FICC–2019–007]

Self-Regulatory Organizations; Fixed Income Clearing Corporation; Notice of Filing of Proposed Rule Change Regarding the Close-Out and Funds-Only Settlement Processes Associated With the Sponsoring Member/Sponsored Member Service

January 6, 2020.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (''Act'')[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on December 27, 2019, Fixed Income Clearing Corporation (''FICC'') filed with the Securities and Exchange Commission (''Commission'') the proposed rule change as described in Items I, II and III below, which Items have been prepared by the clearing agency. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Clearing Agency's Statement of the Terms of Substance of the Proposed Rule Change

The proposed rule change consists of amendments to the FICC Government Securities Division (''GSD'') Rulebook (''Rules'')[3] in order to facilitate the submission of repurchase transactions (''repos'') with a scheduled final settlement date beyond the next Business Day after the initial settlement date (''term repo activity'') through the Sponsoring Member/Sponsored Member Service (''Service'')[4] by: (i) Providing a mechanism by which a Sponsoring Member may cause the termination and liquidation of a Sponsored Member's positions arising from Sponsored Member Trades between the Sponsoring Member and its Sponsored Member that have been novated to FICC and (ii) revising how FICC calculates the funds-only settlement obligations of Sponsored Members and Sponsoring Members with respect to Sponsored Member Trades that have haircuts[5] in order to ensure that the calculation does not result in a return of the haircuts until final settlement. In addition, the proposed rule change would make a correction and certain clarifications and conforming changes, as described in greater detail below.

II. Clearing Agency's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the clearing agency included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The clearing agency has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

(A) Clearing Agency's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

The purpose of the proposed rule change is to amend the Rules in order to facilitate the submission of term repo activity through the Service by: (i) Providing a mechanism by which a Sponsoring Member may cause the termination and liquidation of a Sponsored Member's positions arising from Sponsored Member Trades between the Sponsoring Member and its Sponsored Member that have been novated to FICC and (ii) revising how FICC calculates the funds-only settlement obligations of Sponsored Members and Sponsoring Members with respect to Sponsored Member Trades that have haircuts in order to ensure that the calculation does not result in a return of the haircuts until final settlement. In addition, the proposed rule change would make a correction and certain clarifications and conforming changes, as described in greater detail below.

(i) Background

Under Rule 3A (Sponsoring Members and Sponsored Members), certain Netting Members are permitted to sponsor, as ''Sponsoring Members,'' qualified institutional buyers as defined by Rule 144A[6] under the Securities Act of 1933, as amended (''Securities Act''),[7] and certain legal entities that, although not organized as entities specifically listed in paragraph (a)(1)(i) of Rule 144A under the Securities Act, satisfy the financial requirements necessary to be qualified institutional buyers as specified in that paragraph (*i.e.,* Sponsored Members) into GSD membership.

Under Rule 3A, a Sponsoring Member is permitted to submit to FICC, for comparison, novation, and netting, certain types of eligible securities transactions between itself and its Sponsored Members (''Sponsored Member Trades'').[8] The Sponsoring Member is required to establish an omnibus account at FICC for its Sponsored Members' positions arising from such Sponsored Member Trades (''Sponsoring Member Omnibus Account''),[9] which is separate from the Sponsoring Member's regular netting accounts. For operational and administrative purposes, FICC interacts solely with the Sponsoring Member as agent for purposes of the day-to-day satisfaction of its Sponsored Members' obligations to or from FICC, including their securities and funds-only settlement obligations.[10] Additionally, for operational convenience, pursuant to Section 8(b) of Rule 3A,[11] FICC calculates a single Net Settlement

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] Capitalized terms not defined herein are defined in the Rules, *available at http://www.dtcc.com/~/media/Files/Downloads/legal/rules/ficc_gov_rules.pdf.*

[4] This Service is primarily governed by Rule 3A. *Supra* note 3.

[5] The term haircut shall refer to the amount of collateral in excess of the value of the cash due to the Sponsored Member client at the Close Leg.

[6] 17 CFR 230.144A.

[7] 15 U.S.C. 77a *et seq.*

[8] Rule 1, definition of ''Sponsored Member Trade''; Rule 3A, Sections 6(b) and 7(a), *supra* note 3. In March 2019, the Commission approved FICC rule filing SR–FICC–2018–013, Securities Exchange Act Release No. 85470 (March 29, 2019), 84 FR 13328 (April 4, 2019), which expanded the definition of ''Sponsored Member Trade'' to include certain types of eligible securities transactions between a Sponsored Member and a Netting Member other than the Sponsoring Member. This proposed rule change would apply only to Sponsored Member Trades between the Sponsoring Member and its Sponsored Member.

[9] Rule 1, definition of ''Sponsoring Member Omnibus Account,'' *supra* note 3.

[10] Rule 3A, Sections 5, 6, 7, 8, and 9, *supra* note 3.

[11] Rule 3A, Section 8(b), *supra* note 3.

Obligation and Fail Net Settlement Obligation in each CUSIP for the Sponsoring Member Omnibus Account and associated Deliver Obligations and Receive Obligations.[12] Such calculations do not affect the Sponsored Member's obligations, which are calculated in accordance with Section 7 of Rule 3A [13] in a manner that is generally consistent with how FICC calculates the obligations of other Members.

Sponsoring Members are also responsible for providing FICC with a Sponsoring Member Guaranty [14] whereby the Sponsoring Member guarantees to FICC the payment and performance by its Sponsored Members of their obligations under the Rules.[15] Although Sponsored Members are principally liable to FICC for their own settlement obligations under the Rules, the Sponsoring Member Guaranty requires the Sponsoring Member to satisfy those settlement obligations on behalf of a Sponsored Member if the Sponsored Member defaults and fails to perform its settlement obligations.

Although Rule 3A currently permits Sponsoring Members to submit term repo activity within the Service,[16] most of the Sponsored Member Trades submitted to FICC by Sponsoring Members have a scheduled settlement date of the next Business Day after the initial settlement date, *i.e.,* overnight repo. FICC believes that certain provisions of the Rules discourage the submission of term repo activity within the Service, as discussed more fully below.

(ii) Proposed Change To Facilitate the Submission of Term Repo Activity Through the Service by Providing a Mechanism by Which a Sponsoring Member May Cause the Termination and Liquidation of a Sponsored Member's Positions Arising From Sponsored Member Trades Between the Sponsoring Member and its Sponsored Member That Have Been Novated to FICC

(A) Existing Close-Out Framework

The current Rules allow only FICC to cause the termination and liquidation of a Sponsored Member's positions, even though the relevant Sponsoring Member is responsible for the Sponsored Member's payment and performance in respect of such positions. Rule 22A governs any such termination and liquidation by FICC.[17] That rule provides that, if FICC ceases to act for a Member, including a Sponsored Member, FICC will close-out the Sponsored Member's positions the same way it would close-out the positions of any other Member for which FICC has ceased to act: By (i) establishing a Final Net Settlement Position for each Eligible Netting Security with a distinct CUSIP equal to the net of all outstanding deliver and receive obligations of the Member in respect of the security and (ii) taking market action to liquidate such Final Net Settlement Position.[18]

A Sponsoring Member is required to advise FICC if circumstances have arisen that require FICC to cease to act for a Sponsored Member.[19] However, a Sponsoring Member is not unilaterally able to cause the termination or liquidation of any Sponsored Member Trades. This limitation is inconsistent with other intermediated relationships. In the context of those relationships, the clearing member or similar intermediary is typically permitted to terminate and liquidate the positions of its client that the intermediary guarantees if an event of default or other similar circumstance occurs under the customer or similar bilateral agreement between the intermediary and the client.[20] The intermediary's ability to cause such termination and liquidation is not dependent on a third party's determination that a certain circumstance or event has occurred. Rather, the intermediary and the client are able to agree bilaterally to the circumstances and events that give rise to an event of default allowing the intermediary to terminate or liquidate the guaranteed positions.

The inability of a Sponsoring Member to trigger the termination and liquidation of a Sponsored Member's positions, particularly term repo activity, may result in additional capital requirements for Sponsoring Members and their parent organizations under regulatory standards that implement the recommendations of the Basel Committee on Banking Supervision (the ''BCBS''). This is because, if a Sponsoring Member cannot trigger the termination and liquidation of a Sponsored Member's positions, it is less able to stop the effective extension of credit to the client under the Sponsoring Member Guaranty.[21] In addition, the inability to terminate a Sponsored Member's positions limits the extent to which a Sponsoring Member can use certain risk management tools, such as cross-defaults or other early warning triggers, that allow a Sponsoring Member to close-out the Sponsored Member's positions and stem losses before the Sponsored Member becomes subject to insolvency proceedings or is unable to pay its debts as they become due.[22]

[12] *See* Rule 3A, Section 7(a), *supra* note 3.

[13] Rule 3A, Section 7, *supra* note 3.

[14] Section 2(c) of Rule 3A provides: ''Each Netting Member to become a Sponsoring Member shall also sign and deliver to [FICC] a Sponsoring Member Guaranty . . . .'' A ''Sponsoring Member Guaranty'' is defined in Rule 1 as ''a guaranty . . . that a Sponsoring Member delivers to [FICC] whereby the Sponsoring Member guarantees to [FICC] the payment and performance by its Sponsored Members of their obligations under [the] Rules, including, without limitation, all of the securities and funds-only settlement obligations of its Sponsored Members under [the] Rules.'' *Supra* note 3.

[15] Rule 3A, Section 2(c), *supra* note 3.

[16] Rule 3A, Section 5, *supra* note 3.

[17] Rule 3A, Sections 13(c) and 15(b), *supra* note 3.

[18] Rule 22A, Section 2(b), *supra* note 3.

[19] Rule 3A, Section 15(a), *supra* note 3.

[20] For example, in the context of futures and cleared swaps, a futures commission merchant (''FCM'') is generally permitted to terminate and liquidate positions that the FCM carries for a customer at a derivatives clearing organization (''DCO'') following the customer's default by either entering into offsetting positions in the FCM's customer account at the DCO or terminating the position in the customer account and establishing an identical position in the FCM's house account at the DCO. *See, e.g.,* ICE Clear Credit Rule 304(c), *available at https://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Rules.pdf.*

[21] More specifically, FICC's understanding is that in order for a Sponsoring Member subject to capital requirements that implement the BCBS standards to apply the favorable capital treatment to its obligations under the Sponsoring Member Guaranty that it currently applies to bilateral repos, the Sponsoring Member must conclude with a well-founded basis that, among other things, it will be able to terminate the Sponsored Member Trades subject to the Sponsoring Member Guaranty. *See, e.g.,* 12 CFR 3.2, 3.3(e), 217.2, 217.3(e), 324.2, and 324.3(e). While a lesser standard applies if the guaranteed Sponsored Member Trades are limited to overnight repos, FICC believes that applying the same termination and liquidation mechanism to overnight and term repo activity would help to clarify the capital treatment for both types of activity and promote consistency across Sponsored Member Trades. Sponsoring Members interested in such relief should discuss this matter with their regulatory capital experts.

[22] A ''cross-default'' is a provision that allows one party to exercise default rights if its customer or counterparty defaults under another agreement. Other early warning triggers include credit rating downgrades, breaches of representations, and covenants limiting a party's ability to incur debt or suffer liens on its property. If a Sponsoring Member is unable to initiate the termination of a Sponsored Member's Sponsored Member Trades, it cannot use these ''early warning triggers,'' but must instead wait for the occurrence of a circumstance that gives FICC the ability to cease to act for the Sponsored

Continued

In addition to giving FICC the exclusive ability to cause the termination and liquidation of a Sponsored Member's positions, Rule 22A provides for FICC to control such termination and liquidation of a Sponsored Member's Final Net Settlement Positions.[23] When FICC ceases to act for a Member, it generally looks to buy, borrow, reverse in, sell, lend, or repo out securities, so as to facilitate its ability to settle the Final Net Settlement Positions.[24]

FICC's control of such termination and liquidation of Sponsored Member Trades could expose the Sponsoring Member to certain risks that other intermediaries do not typically face. This is because, in the event FICC ceases to act for a Sponsored Member under Rule 22A,[25] the Sponsoring Member will generally enter into one or more transactions with third parties in order to hedge its performance obligations under the Sponsoring Member Guaranty. In most other intermediated relationships, the price at which the intermediary hedges or closes out the exposure under the customer's defaulted positions typically informs the pricing of those positions and thus the amount of the intermediary's claim against the customer. However, if FICC, rather than the Sponsoring Member, calculates the price of the Sponsored Member's positions, there may be differences arising from the timing of execution or the type of liquidation or hedging transactions used by FICC and/or the use of different pricing sources by FICC, all of which could limit the ability of the Sponsoring Member to recover the losses it incurs in entering into its hedging transactions.

(B) Proposed Rule Change

FICC is proposing to amend Rule 3A to add a new Section 18. This new section would allow a Sponsoring Member to cause the termination and liquidation of a Sponsored Member's positions arising from Sponsored Member Trades between the Sponsoring Member and the Sponsored Member for which the Sponsoring Member is responsible. The section would not, however, limit the ability of FICC to cease to act for a Sponsored Member.

In the event (i) the Sponsoring Member triggers the termination of a Sponsored Member's positions or (ii) FICC ceases to act for the Sponsored Member and the Sponsoring Member does not continue to perform the obligations of the Sponsored Member, both the Sponsored Member's positions and the Sponsoring Member's corresponding positions arising from the Sponsored Member Trades between the Sponsoring Member and the Sponsored Member would be terminated. Thereupon, the Sponsoring Member would calculate a net liquidation value of such terminated positions, which liquidation value would be paid either to or by the Sponsored Member by or to the Sponsoring Member. FICC would not, as a practical matter, be involved in such settlement and would not need to take any market action because the termination of the Sponsored Member's positions and the corresponding Sponsoring Member's positions would leave FICC flat. Additionally, the Sponsoring Member would indemnify FICC for any claim by a Sponsored Member arising out of the Sponsoring Member's calculation of the net liquidation value.

(C) Benefits of the Proposal

By allowing Sponsoring Members to terminate and liquidate a Sponsored Member's positions that arise from Sponsored Member Trades between the Sponsored Member and the Sponsoring Member that have been novated to FICC, FICC believes that the new Section 18 would align the Service to other intermediated relationships and allow Sponsoring Members to more effectively manage the risks of Sponsored Member Trades, particularly term repo activity. Sponsoring Members and their Sponsored Members would be able to agree with one another in their bilateral documentation on the circumstances in which the Sponsoring Member would be permitted to cause the termination of the Sponsored Member's positions. Such agreement would not affect FICC's ability to cease to act for a Sponsored Member in accordance with existing Rules 3A, 21 and 22.[26]

FICC believes that providing Sponsoring Members with greater ability to manage their risks associated with Sponsored Member Trades would allow Sponsoring Members to submit to FICC more Sponsored Member Trades, including, in particular, term repo activity. FICC believes that having more centrally cleared term repo transactions would promote the prompt and accurate clearance and settlement of securities transactions because more securities transactions would benefit from FICC's risk management and guaranty of settlement.

Further, FICC believes that allowing the Sponsoring Member to take market action would decrease the price risks currently faced by Sponsoring Members (as described in the last paragraph of Item II(A)1(ii)(A) above) without increasing the litigation risk to FICC arising from a Sponsored Member default because the Sponsoring Member would indemnify FICC for any losses or expense arising from a Sponsored Member's claim related to the Sponsoring Member's calculation of any liquidation amount.

(D) Proposed Changes to the Rules

Addition of New Section 18 to Rule 3A (Sponsoring Members and Sponsored Members)

FICC is proposing to add a new Section 18 to Rule 3A, which would (i) permit a Sponsoring Member to cause the termination and liquidation of a Sponsored Member's positions arising from Sponsored Member Trades between the Sponsoring Member and the Sponsored Member and (ii) govern how the termination and liquidation would be effectuated. Section 18 would contain the following subsections.

Subsection (a)

Subsection (a) would clarify the scope of positions to which proposed Section 18 applies. It would state that Section 18 applies only to positions arising from Sponsored Member Trades within the meaning of subsection (a) of the Sponsored Member Trade definition.[27] Subsection (a) of the Sponsored Member Trade definition[28] encompasses eligible transactions between a Sponsored Member and its Sponsoring Member. Sponsored Member Trades that are between a Sponsored Member and a third-party Member would not be within the scope of Section 18 because, in that instance, there would not be a corresponding Sponsoring Member position to terminate.

Subsection (a) would further state that Section 18 would not apply if either (i) FICC has ceased to act for the relevant Sponsoring Member or (ii) a Corporation Default has occurred. FICC has discretion in the event that it ceases to act for a Sponsoring Member to close-out the positions of Sponsored Members for which the defaulting Sponsoring Member was responsible or to allow them to settle.[29] If FICC does close-out such positions, it will do so in accordance with Rule 22A.[30] If a Corporation Default has occurred in

Member. By that point, however, the Sponsoring Member may have significant uncovered exposure to the Sponsored Member.

[23] Rule 22A, Section 2(b), *supra* note 3.

[24] *Id.*

[25] Rule 22A, *supra* note 3.

[26] Rules 3A, 21 and 22, *supra* note 3.

[27] Rule 1, *supra* note 3.

[28] *Id.*

[29] Rule 3A, Section 16, *supra* note 3.

[30] Rule 22A, *supra* note 3.

respect of FICC, each Sponsored Member's positions, and all other Members' positions, will be closed out in accordance with the provisions of Rule 22B.[31]

Subsection (b)

Subsection (b) of proposed Section 18 would set out the process by which a Sponsoring Member or FICC may cause the termination of a Sponsored Member's positions. It would provide that the Sponsoring Member or FICC may cause such termination by delivering a notice to FICC or the Sponsoring Member, respectively. FICC anticipates that each Sponsored Member and Sponsoring Member would agree in the bilateral documentation between them as to what circumstances or events give rise to the ability of the Sponsoring Member to deliver a notice to FICC terminating the Sponsored Member's positions.[32]

The notice submitted by a Sponsoring Member to FICC (or vice versa) would cause the termination of all of the positions of the Sponsored Member that arose from Sponsored Member Trades between the Sponsoring Member and the Sponsored Member and that have been novated to FICC. The notice would also cause the termination of the corresponding positions of the Sponsoring Member (*i.e.,* the positions of the Sponsoring Member that arose from Sponsored Member Trades between the Sponsoring Member and the Sponsored Member). The effect of such terminations would be to leave FICC flat.

Subsection (b) would also provide that the termination of the Sponsored Member's positions (and the Sponsoring Member's corresponding positions) would be effected by the Sponsoring Member's establishment of a final Net Settlement Position for each Eligible Netting Security with a distinct CUSIP number (''Final Net Settlement Position''). This provision would align with existing Rule 22A,[33] which provides for FICC to calculate such Final Net Settlement Position when it ceases to act for a Member. As under existing Rule 22A,[34] the Final Net Settlement Position would equal the net of all outstanding deliver obligations and receive obligations of the Sponsored Member or Sponsoring Member with respect to the relevant security.

Subsection (c)

Subsection (c) of proposed Section 18 would specify how the Final Net Settlement Positions established pursuant to subsection (b) would be liquidated (*i.e.,* how such positions would be converted into an amount payable). It would also provide how the amount payable arising from the liquidation of the Final Net Settlement Positions would be discharged.

Subsection (c) would first provide that the Sponsoring Member would liquidate the Final Net Settlement Positions established pursuant to subsection (b) by establishing (i) a single liquidation amount in respect of the Sponsored Member's Final Net Settlement Positions (a ''Sponsored Member Liquidation Amount'') and (ii) a single liquidation amount in respect of the Sponsoring Member's Final Net Settlement Positions (a ''Sponsoring Member Liquidation Amount''). The Sponsored Member Liquidation Amount would be owed either by FICC to the Sponsored Member or by the Sponsored Member to FICC because it would relate to the Sponsored Member's Final Net Settlement Positions with FICC, while the Sponsoring Member Liquidation Amount would be owed either by FICC to the Sponsoring Member or by the Sponsoring Member to FICC because it would relate to the Sponsoring Member's Final Net Settlement Positions with FICC.

Because the Final Net Settlement Positions of the Sponsoring Member would be identical to, but in the opposite direction of, the Final Net Settlement Positions of the Sponsored Member, the Sponsored Member Liquidation Amount would equal the Sponsoring Member Liquidation Amount. Therefore, if FICC were to owe the Sponsored Member Liquidation Amount to the Sponsored Member, the Sponsoring Member would owe the Sponsoring Member Liquidation Amount to FICC. By the same token, if the Sponsored Member were to owe the Sponsored Member Liquidation Amount to FICC, FICC would owe the Sponsoring Member the Sponsoring Member Liquidation Amount. In all instances, FICC would owe and be owed the same amount of money.

Subsection (c) would also provide how the Sponsoring Member may calculate the Sponsoring Member Liquidation Amount. It would state that the Sponsoring Member may calculate the Sponsoring Member Liquidation Amount based on prevailing market prices of the relevant securities and/or the gains realized and losses incurred by the Sponsoring Member in hedging its risk associated with the liquidation of the Sponsoring Member's Final Net Settlement Positions. Subsection (c) would further clarify that such Sponsoring Member Liquidation Amount may also take into account any losses and expenses incurred by the Sponsoring Member in connection with the liquidation of the positions. This approach would be broadly consistent with how FICC would calculate an amount owing by a Member in respect of its Final Net Settlement Positions under existing Rule 22A.[35]

Subsection (c) would provide that, if a Sponsored Member Liquidation Amount is due to FICC, the Sponsoring Member would be obligated to pay such Sponsored Member Liquidation Amount to FICC under the Sponsoring Member Guaranty and that this obligation would, automatically and without further action, be set off against the obligation of FICC to pay the corresponding Sponsoring Member Liquidation Amount to the Sponsoring Member. By virtue of such setoff, the Sponsored Member's obligation to FICC would be discharged, as would FICC's obligation to the Sponsoring Member. The Sponsoring Member would, however, have a reimbursement claim against the Sponsored Member in an amount equal to the Sponsored Member Liquidation Amount. This reimbursement claim would arise as a matter of law by virtue of the Sponsoring Member's performance under Sponsoring Member Guaranty, though Sponsoring Members and Sponsored Members may specify terms related to the reimbursement claim in their bilateral documentation. FICC would have no rights or obligations in respect of any such reimbursement claim.

If a Sponsored Member Liquidation Amount were owed by FICC to the Sponsored Member, subsection (c) would provide for the Sponsoring Member to satisfy that obligation by

[31] Rule 22B, *supra* note 3. In September 2018, the Commission approved FICC rule filing SR–FICC–2018–008, Securities Exchange Act Release No. 84255 (September 21, 2018), 83 FR 48890 (September 27, 2018), which amended the Rules to clarify that Rule 22B (Corporation Default) applies to Sponsored Members.

[32] It bears noting in this regard that termination of the Sponsored Member's positions would not be the exclusive mechanism by which a Sponsoring Member may limit its credit risk. Under Section 2(i) of current Rule 3A, a Sponsoring Member may voluntarily elect to terminate its status as a Sponsoring Member in respect of one or more Sponsored Members. Such a termination does not affect the settlement of the Sponsored Member's existing positions but does restrict the ability of the Sponsored Member to have its future trades accepted for novation to FICC through such Sponsoring Member. The proposed rule change would not affect the functioning of Section 2(i) or the general ability of a Sponsoring Member and the Sponsored Member to agree on the circumstances of when the Sponsoring Member may terminate its status as Sponsoring Member for the Sponsored Member. Rule 3A, Section 2(i), *supra* note 3.

[33] Rule 22A, *supra* note 3.

[34] *Id.*

[35] *Id.*

transferring the Sponsored Member Liquidation Amount to the account at the Funds-Only Settling Member Bank at which the Sponsoring Member maintains Funds-Only Settlement Amounts related to its Sponsored Member Omnibus Account. Subsection (c) would state that, to the extent the Sponsoring Member makes such a transfer, it will discharge FICC's obligation to transfer the Sponsored Member Liquidation Amount to the Sponsored Member and the Sponsoring Member's corresponding obligation to transfer the Sponsoring Member Liquidation Amount to FICC.

Subsection (d)

Under existing Rule 22A,[36] FICC is responsible for the liquidation of a Member's Final Net Settlement Positions and calculation of an amount owing by or to the Member. Because proposed Section 18 would provide for the Sponsoring Member, rather than FICC, to liquidate the Sponsored Member's (and the Sponsoring Member's) Final Net Settlement Positions and calculate the corresponding amounts owing, the Sponsoring Member would be required to indemnify FICC in the event the Sponsored Member makes or asserts any claim relating to such calculation. Subsection (d) would set forth such indemnity. It would provide for the Sponsoring Member to indemnify FICC and its officers, directors, employees, shareholders, agents, and Members for any loss, liability, or expenses resulting from any claim by a Sponsored Member relating to the Sponsoring Member's calculation of the Sponsored Member Liquidation Amount or Sponsoring Member Liquidation Amount.

Subsection (e)

Under Section 8(g) of existing Rule 3A,[37] each Sponsored Member grants to FICC a security interest in all assets and property placed by the Sponsored Member in the possession of FICC in order to secure the obligations of the Sponsored Member to FICC. This security interest provides FICC with credit support in the event that it must terminate and liquidate the Sponsored Member's positions and assert a claim against the Sponsored Member. However, if proposed Section 18 were to apply, the obligation of the Sponsored Member to FICC under the terminated positions would be discharged via the setoff provided for under subsection (c).

Subsection (e) of proposed Section 18 would clarify FICC acknowledges that a Sponsoring Member may take a security interest in FICC's obligations to the Sponsored Member. Such security interest would not impose new obligations on FICC, but could allow the Sponsoring Member to direct FICC to submit payments due to the Sponsored Member to the Sponsoring Member, so that the Sponsoring Member can apply such amounts to the Sponsored Member's unsatisfied obligations to the Sponsoring Member. Subsection (e) additionally would provide that, if Section 18 were to apply, FICC's security interest in the Sponsored Member's assets would be subordinated to the Sponsoring Member's security interest. As noted above, if Section 18 applied, FICC would not need to look to the Sponsored Member or its assets for performance in respect of the positions that are terminated under Section 18.

(iii) Proposed Change To Facilitate the Submission of Term Repo Activity Through the Service by Revising How FICC Calculates the Funds-Only Settlement Obligations of Sponsored Members and Sponsoring Members With Respect to Sponsored Member Trades That Have Haircuts in Order To Ensure That Such Calculation Does Not Result in a Return of the Haircuts Until Final Settlement

In light of the intermediary relationship between a Sponsoring Member and its Sponsored Member, a Sponsoring Member may choose to post to its Sponsored Member client a haircut in order to address regulatory and/or investment guideline concerns. Specifically, the regulations and/or investment guidelines to which a Sponsored Member is subject may require that it receive Eligible Securities worth more than the cash that it is due to receive at final settlement of a FICC-cleared reverse repo, *i.e.,* a haircut.[38] Similarly, in some circumstances, a Sponsoring Member may choose to collect such haircut from its Sponsored Member client at the Start Leg to mitigate its exposure under the Sponsoring Member Guaranty. In both situations, FICC's understanding is that accounting considerations may favor those postings being facilitated through FICC's systems. Specifically, in light of the fact that the counterparty on a FICC-cleared trade changes after novation—and the Sponsoring Member and Sponsored Member thereafter both face FICC as principal—having an obligation to receive and/or deliver a haircut at final settlement directly to FICC as the post-novation counterparty may be favorable for the Sponsoring Member and the Sponsored Member from an accounting perspective.[39]

However, under Rule 13, FICC's standard funds-only settlement process involves marking to market twice a day each Business Day all positions associated with term repo activity, including any Sponsored Member Trade with a Close Leg that is scheduled to occur two or more Business Days after the settlement of the Start Leg.[40] Specifically, FICC will calculate a ''Collateral Mark'' equal to the absolute value of the difference between (i) a Sponsored Member Trade's Contract Value (*i.e.,* the dollar value at which it is due to finally settle) and (ii) its Market Value (*i.e.,* FICC's system price of the securities underlying the transaction). This Collateral Mark is incorporated into the calculation of certain of the Funds-Only Settlement Amounts payable under Rule 13.[41]

When the Market Value exceeds the Contract Value, the Collateral Mark is negative for, and thus payable by, the Member party that has a Net Short Position (*i.e.,* the party required to deliver securities at final settlement). As a result, under FICC's existing funds-only settlement process, a Sponsored Member or Sponsoring Member that has received a haircut at the Start Leg of a Sponsored Member Trade would be required to transfer an amount of cash equal to that haircut (plus or minus any interim mark-to-market movements) on the next Business Day after the Start Leg has settled. This would frustrate the purpose of the haircut as between the Sponsoring Member and Sponsored Member. Specifically, if the haircut is returned before final settlement of a Sponsored Member Trade, the party that was supposed to retain the haircut for the duration of the trade would cease to be overcollateralized, thus defeating the contractual intent of the parties.[42]

[36] *Id.*

[37] Rule 3A, Section 8(g), *supra* note 3.

[38] For example, FICC's understanding is that Investment Company Act Rule 5b–3 requires that a repurchase agreement be ''collateralized fully'' in order for a registered investment company to apply favorable regulatory treatment to it. The ''collateralized fully'' definition requires that the value of the securities posted to the investment company at all times equal or exceed the repurchase price, plus any loss of interest or transaction costs that could be incurred in a default. In light of these requirements, FICC understands that many registered investment companies require counterparties to post securities with a value that is equal to the repurchase price, plus a cushion to cover any changes in value of the securities or lost interest or transaction costs associated with a counterparty default.

[39] Sponsoring Members interested in such relief should discuss this matter with their accounting experts.

[40] Rule 13, *supra* note 3.

[41] *Id.*

[42] Because the Schedule of Timeframes in the Rules provides for intraday funds-only settlement amounts to be calculated using each Member's

In order to ensure that haircuts are not returned until final settlement, FICC proposes to amend Rule 3A and Rule 1. Specifically, FICC proposes to amend Section 9(a) of Rule 3A to provide that, if the parties to a Sponsored Member Trade agree for such Sponsored Member Trade to have a haircut, then any Funds-Only Settlement Amount applicable to such Sponsored Member Trade that includes a Collateral Mark would be calculated without regard for the Collateral Mark. Such Collateral Mark would be replaced by either a Haircut Deficit or Haircut Surplus. A ''Haircut Deficit'' would exist if the amount by which the Market Value as of the settlement date of the Start Leg exceeded the Contract Value of the Close Leg (the ''Initial Haircut'') is greater than the amount by which the Market Value as of the time of measurement exceeds the Contract Value of the Close Leg (the ''Current Haircut''). Any Haircut Deficit would be payable by the Member party with a Net Long Position. A ''Haircut Surplus'' would exist if the Current Haircut exceeds the Initial Haircut, and any Haircut Surplus would be payable by the Member party with a Net Short Position. FICC also proposes to amend Section 9(a) of Rule 3A to make clear that any Initial Haircut would be as agreed between the parties to the Sponsored Member Trade, and that FICC would not be under any obligation to verify the parties' agreement with respect to any Initial Haircut, and its calculation of the Initial Haircut would be conclusive and binding on the parties.

For example, if on initial settlement of a Sponsored Member Trade a Sponsored Member transferred $98 in cash and received Eligible Securities worth $100,[43] the Initial Haircut for such Sponsored Member Trade would be $2 (*i.e.,* Market Value as of the settlement date of the Start Leg of $100 minus Contract Value of the Close Leg of $98). If on the next Business Day after initial settlement the value of the Eligible Securities increases in value to $101, then the Current Haircut on the Sponsored Member Trade on such Business Day would be $3 (*i.e.,* Market Value as of the time of measurement of $101 minus Contract Value of the Close Leg of $98), and there would be a Haircut Surplus of $1 (*i.e.,* Current Haircut of $3 minus the Initial Haircut of $2) that would be owing to FICC by the Sponsored Member, as the Member party with the Net Short Position. Similarly, if in the same example, the value of the Eligible Securities decreased from $100 to $99 on the next Business Day after initial settlement, then the Current Haircut on the Sponsored Member Trade on such Business Day would be $1 (*i.e.,* Market Value of $99 as of the time of measurement minus Contract Value of the Close Leg of $98) and there would be a Haircut Deficit of $1 (*i.e.,* Initial Haircut of $2 minus the Current Haircut of $1) that would be owing to FICC by the Sponsoring Member, as the Member party with the Net Long Position.

FICC would also revise Rule 1 to add new defined terms; these new defined terms are related to the proposed clarifications to Rule 3A described in the paragraph above. FICC would add the following new defined terms: (i) Current Haircut, (ii) Haircut Deficit, (iii) Haircut Surplus and (iv) Initial Haircut.

FICC believes that the proposed changes to Rule 3A and Rule 1 described above would allow a Sponsoring Member and its Sponsored Member who intend for one of those two parties to remain overcollateralized for the duration of a Sponsored Member Trade to transfer a haircut between each other and allow such haircut to remain with the intended party until final settlement of the Sponsored Member Trade.

(iv) Proposed Correction, Clarifications and Conforming Changes

FICC proposes to make a correction as well as certain clarifications and conforming changes to Rule 3A, as further described below.

(A) Proposed Clarifications to Sections 8(c) and 9(b) of Rule 3A

FICC proposes to make certain clarifications to Section 8(c) of Rule 3A related to proposed Section 18 described in Item II(A)1(ii) above.

First, FICC is proposing to add a parenthetical to Section 8(c) clarifying that the operational netting provisions of Section 8(b) do not substantively modify a Sponsored Member's obligations to FICC. As noted above, Section 8(b) provides that, for operational convenience, FICC calculates a single Net Settlement Position and Fail Net Settlement Position in each CUSIP for the Sponsoring Member's Sponsoring Member Omnibus Account. Section 8(c), in turn, provides that each Sponsored Member shall satisfy its ''allocable portion'' of the Deliver Obligations and Receive Obligations established for the Sponsoring Member Omnibus Account.

Neither Section 8(b) nor Section 8(c) modifies the obligations of any Sponsored Member; those provisions are simply designed for operational convenience. Each Sponsored Member still remains responsible for its Deliver Obligations to and Receive Obligations from FICC, which are calculated in accordance with Section 7 of Rule 3A. The Sponsored Member's ''allocable portion'' of the Deliver Obligations and Receive Obligations of the Sponsoring Member Omnibus Account will always equal its Deliver Obligations to and Receive Obligations from FICC, as calculated under Section 7 of Rule 3A.

Therefore, in order to eliminate doubt regarding the extent of the Sponsored Member's obligations upon a termination and liquidation of a Sponsored Member's positions pursuant to proposed Section 18, FICC is proposing to add a parenthetical to Section 8(c) to make clear that a Sponsored Member's ''allocable portion'' of the obligations established for the Sponsoring Member Omnibus Account are the obligations of the Sponsored Member, as calculated in Section 7 of Rule 3A.

FICC is also proposing to add language at the end of Sections 8(c) and 9(b) to clarify that, if a Sponsoring Member satisfies the net Deliver Obligations and Receive Obligations or the net Funds-Only Settlement Amount obligations of its Sponsoring Member Omnibus Account, including through the setoff described in proposed Section 18, before the Sponsoring Member receives corresponding performance from the Sponsored Member, such satisfaction would constitute performance by the Sponsoring Member under the Sponsoring Member Guaranty with respect to the relevant Sponsored Member's allocable portion of the Sponsoring Member Omnibus Account Deliver Obligations and Receive Obligations or Funds-Only Settlement Amount obligations.

If a termination and liquidation under proposed Section 18 were to occur, the Sponsoring Member would be required to perform on behalf of the Sponsored Member under the Sponsoring Member Guaranty. The clarification described above is designed to ensure that, when the Sponsoring Member effects such performance, it would be entitled to

positions as of noon on the relevant Business Day, FICC's existing funds-only settlement process will not materially affect haircuts on overnight Sponsored Member Trades that are submitted for clearing in the afternoon. Nonetheless, FICC believes that applying the same Funds-Only Settlement calculations to overnight and term repo activity would help promote consistency across Sponsored Member Trades.

[43] For the sake of simplicity, this example excludes accrued interest and thus assumes that the amount of cash transferred at settlement of the Start Leg equals the amount of cash due to be transferred at the Close Leg.

reimbursement from the Sponsored Member.

(B) Proposed Correction, Clarifications and Conforming Changes to Section 9 of Rule 3A

FICC also proposes to make a correction as well as certain clarifications and conforming changes to Rule 3A. The proposed correction, clarifications and conforming changes are related to the clarifications described in Item II(A)1(iii) above with respect to the haircut.

To enhance clarity, FICC proposes to make certain structural changes to Rule 3A, Section 9. Specifically, FICC proposes to move language from current subsection (b) of Section 9 and make it subsection (c). This, in turn, would require conforming changes to re-letter original Sections 9(c) and 9(d) to 9(d) and 9(e), respectively. FICC also proposes to make a conforming grammatical change by deleting ''such'' and replacing it with ''the'' in the first sentence of proposed subsection (c). FICC also proposes to revise proposed Section 9(c) of Rule 3A to clarify that the Sponsored Member is responsible for satisfying the allocable portion of the Funds-Only Settlement Amount calculated for the Sponsoring Member Omnibus Account.

2. Statutory Basis

FICC believes these proposed changes are consistent with the requirements of the Act, and the rules and regulations applicable to a registered clearing agency. Specifically, FICC believes that the proposed changes are consistent with Section 17A(b)(3)(F) of the Act [44] and Rule 17Ad–22(e)(23)(i),[45] as promulgated under the Act, for the reasons stated below.

Section 17A(b)(3)(F) of the Act requires, in part, that the Rules be designed to (i) remove impediments to and perfect the mechanism of a national system for the prompt and accurate clearance and settlement of securities transactions and (ii) promote the prompt and accurate clearance and settlement of securities transactions.[46]

FICC believes that the proposed changes described in Item II(A)1(ii) above, *i.e.,* to facilitate the submission of term repo activity through the Service by providing a mechanism by which a Sponsoring Member may cause the termination and liquidation of a Sponsored Member's positions arising from Sponsored Member Trades between the Sponsoring Member and its Sponsored Member that have been novated to FICC, are designed to remove certain impediments to and perfect the mechanism of a national settlement system for the prompt and accurate clearance and settlement of securities transactions. In particular, FICC believes that providing a mechanism by which a Sponsoring Member may cause the termination and liquidation of a Sponsored Member's positions arising from Sponsored Member Trades between the Sponsoring Member and its Sponsored Member that have been novated to FICC would give Sponsoring Members greater ability to manage the risks associated with Sponsored Member Trades, particularly Sponsored Member Trades with a scheduled final settlement date beyond the next Business Day after the initial settlement date. Such effective risk management would reduce the risk of a Sponsoring Member failure, which could otherwise disrupt the prompt and accurate clearance and settlement of Sponsored Member Trades and other transactions submitted to FICC. As described above, the absence of the ability on the part of Sponsoring Members to terminate and liquidate such Sponsored Member positions is currently an impediment that discourages term repo activity within the Service. The proposal to provide Sponsoring Members with that ability would remove the impediment, consistent with Section 17A(b)(3)(F) of the Act.[47]

FICC also believes the proposed changes are designed to promote the prompt and accurate clearance and settlement of securities transactions. By allowing Sponsoring Members to manage risks associated with Sponsored Member Trades more effectively, FICC believes the proposed changes would enable Sponsoring Members to submit a greater number of securities transactions to be cleared and settled by a central counterparty. In particular, FICC believes Sponsoring Members would be able to submit to FICC more term repo activity. FICC's clearance and settlement of such term repo activity would promote the prompt and accurate clearance and settlement of securities transactions by increasing the number of transactions subject to FICC's risk management and guaranty of settlement.

FICC believes the proposed changes described in Item II(A)1(iii) above, *i.e.,* to facilitate the submission of term repo activity through the Service by revising how FICC calculates the funds-only settlement obligations of Sponsored Members and Sponsoring Members with respect to Sponsored Member Trades that have haircuts in order to ensure that such calculation does not result in a return of the haircuts until final settlement, are designed to promote the prompt and accurate clearance and settlement of securities transactions. As described above, FICC believes these clarifications would honor the contractual intent of the Sponsoring Members and their Sponsored Members to transfer haircuts between each other for Sponsored Member Trades. FICC believes that the proposed change to the calculation (resulting in the return of haircuts at final settlement only) may encourage Sponsoring Members to submit a greater number of securities transactions to be cleared and settled by FICC, and in particular, term repo activity. As described above, FICC's clearance and settlement of such term repo activity would promote the prompt and accurate clearance and settlement of securities transactions by increasing the number of transactions subject to FICC's risk management and guaranty of settlement. Moreover, the current calculation of the funds-only settlement obligations of Sponsored Members and Sponsoring Members is currently an impediment that discourages term repo activity within the Service. The proposal described in Item II(A)1(iii) above would remove the impediment, consistent with Section 17A(b)(3)(F) of the Act.[48]

FICC believes the proposed correction, clarifications, and conforming changes described in Item II(A)1(iv) above are also designed to promote the prompt and accurate clearance and settlement of securities transactions by enhancing clarity and transparency regarding the Service. Having transparent and clear provisions regarding the Service would enable Members to better understand the operation of the Service and would provide Members with increased predictability and certainty regarding their rights and obligations. FICC believes that this increased predictability and certainty regarding their rights and obligations may encourage Sponsoring Members to submit a greater number of securities transactions to be cleared and settled by FICC, and in particular, term repo activity. FICC's clearance and settlement of such term repo activity would promote the prompt and accurate clearance and settlement of securities transactions by increasing the number of transactions subject to FICC's risk management and guaranty of settlement. Therefore, FICC believes the proposed correction, clarifications, and

[44] 15 U.S.C. 78q–1(b)(3)(F).

[45] 17 CFR 240.17Ad–22(e)(23)(i).

[46] 15 U.S.C. 78q–1(b)(3)(F).

[47] *Id.*

[48] *Id.*

conforming changes described in Item II(A)1(iv) above are designed to promote the prompt and accurate clearance and settlement of securities transactions.

Rule 17Ad–22(e)(23)(i) under the Act requires FICC to establish, implement, maintain, and enforce written policies and procedures reasonably designed to publicly disclose all relevant rules and material procedures.[49] FICC believes that the proposed changes described in Item II(A)1(ii) above would establish a clear and transparent mechanism by which a Sponsoring Member may terminate and liquidate the positions of a Sponsored Member. Having a clear mechanism for such termination and liquidation would allow Sponsoring Members and Sponsored Members to understand the circumstances in which a Sponsored Member's positions may be terminated and liquidated and how such termination and liquidation would occur. FICC also believes that the proposed rule changes described in Item II(A)1(iii) above would enhance clarity and transparency regarding the funds-only settlement obligations of Sponsored Members with respect to any term repo activity. Specifically, the proposed changes would revise how FICC calculates the funds-only settlement obligations of Sponsored Members and Sponsoring Members with respect to Sponsored Member Trades that have haircuts in order to ensure that such calculation does not result in a return of the haircuts until final settlement. FICC believes that these proposed changes would provide enhanced clarity to Sponsoring Members and Sponsored Members regarding their rights and obligations as well as the rights and obligations of FICC. Additionally, the proposed correction, clarifications, and conforming changes described in Item II(A)1(iv) above would add further clarity to the Rules. FICC believes the proposal would ensure that the Rules remain clear and accurate, and facilitate Members' understanding of the Rules, and provide Members with increased predictability and certainty regarding their obligations. As such, FICC believes that these proposed changes are consistent with Rule 17Ad–22(e)(23)(i) under the Act.[50]

(B) Clearing Agency's Statement on Burden on Competition

FICC believes that the proposed changes in Item II(A)1(ii) above could have an impact on competition by promoting and burdening competition. The proposal to allow a Sponsoring Member to control the termination and liquidation of its Sponsored Member's FICC-cleared positions could promote competition by increasing the ability of Sponsoring Members to more effectively manage the risks of Sponsored Member Trades, particularly Sponsored Member Trades with a scheduled final settlement date beyond the next Business Day after the initial settlement date. Such increased risk management ability, in turn, could cause more institutions to become Sponsoring Members, and existing and future Sponsoring Members to accept a greater number and variety of Sponsored Members and Sponsored Member Trades, including, in particular, term repo activity. FICC also believes the proposed changes in Item II(A)1(ii) above could promote competition by allowing Sponsoring Members and Sponsored Members to negotiate the circumstances in which the Sponsoring Member could cause the termination and liquidation of the Sponsored Member's positions. The prospect of negotiation could allow Sponsored Members to consider various Sponsoring Members and the terms they offer.

Conversely, the proposed changes described in Item II(A)1(ii) above to allow a Sponsoring Member to control the termination and liquidation of its Sponsored Member's FICC-cleared positions could burden competition by applying a different standard for the termination and liquidation of Sponsored Members' FICC-cleared positions than the standard that applies to other Members under Rule 22A.[51] However, FICC does not believe that the proposed changes described in Item II(A)1(ii) above would result in a significant burden on competition because the Sponsored Member would have the ability to negotiate with possible Sponsoring Members the circumstances in which the Sponsoring Member may effectuate a termination and the methodology it would use in calculating the liquidation amount.

Regardless of whether the potential burden on competition discussed in the previous paragraph is significant, FICC believes that any burden on competition that may be created by these proposed changes would be necessary and appropriate in furtherance of the purposes of the Act, as permitted by Section 17A(b)(3)(I) of the Act.[52]

FICC believes that any burden on competition created by the proposed changes described in Item II(A)1(ii) above is necessary in furtherance of the purposes of the Act to (i) remove impediments to and perfect the mechanism of a national system for the prompt and accurate clearance and settlement of securities transactions and (ii) promote the prompt and accurate clearance and settlement of securities transactions.[53] Specifically, FICC believes that any burden on competition resulting from allowing a Sponsoring Member to control the termination and liquidation of its Sponsored Member's FICC-cleared positions would be necessary in order to provide Sponsoring Members with greater ability to manage the risks associated with Sponsored Member Trades, particularly term repo activity. As described in detail in Item II(A)2 above, FICC believes that providing Sponsoring Members with greater ability to manage the risks associated with Sponsored Member Trades, particularly term repo activity, would (i) remove impediments to and perfect the mechanism of a national system for the prompt and accurate clearance and settlement of securities transactions and (ii) promote the prompt and accurate clearance and settlement of securities transactions. Therefore, FICC believes any burden that is created by these proposed changes would be necessary in furtherance of the purposes of the Act, as permitted by Section 17A(b)(3)(I) of the Act.[54]

Furthermore, FICC believes that any burden on competition resulting from allowing a Sponsoring Member to control the termination and liquidation of its Sponsored Member's FICC-cleared positions would be appropriate in furtherance of the purposes of the Act, as permitted by Section 17A(b)(3)(I) of the Act,[55] because the proposed changes would remove the current impediment whereby the Sponsoring Member is not unilaterally able to cause the termination or liquidation of any Sponsored Member Trades. As stated above, there is an intermediary relationship between a Sponsoring Member and its Sponsored Member, including the Sponsoring Member's liability to FICC for the Sponsored Member's performance under the Sponsoring Member Guaranty, which does not apply to other Members. FICC believes this unique relationship warrants the Sponsoring Member having control over the termination and liquidation of its Sponsored Member's FICC-cleared positions. Moreover, the proposed changes would be more consistent with other intermediated

[49] 17 CFR 240.17Ad–22(e)(23)(i).

[50] *Id.*

[51] Rule 22A, *supra* note 3.

[52] 15 U.S.C. 78q–1(b)(3)(I).

[53] 15 U.S.C. 78q–1(b)(3)(F).

[54] 15 U.S.C. 78q–1(b)(3)(I).

[55] *Id.*

relationships where the intermediary is typically permitted to terminate and liquidate the positions of its client that the intermediary guarantees if an event of default or other similar circumstance occurs under the bilateral agreement between the intermediary and the client. The current inability to effectuate such termination and liquidation is inconsistent with other intermediated relationships and discourages term repo activity within the Service. The proposed changes would enable the Sponsoring Member to cause the termination and liquidation of the Sponsored Member's positions for which the Sponsoring Member is responsible, thereby providing it with greater ability to manage the risks associated with Sponsored Member Trades, particularly term repo activity. Therefore, FICC believes any burden that is created by these proposed changes would be appropriate in furtherance of the purposes of the Act, as permitted by Section 17A(b)(3)(I) of the Act.[56]

FICC believes that the proposed changes described in Item II(A)1(iii) above to facilitate the submission of term repo activity through the Service by revising how FICC calculates the funds-only settlement obligations of Sponsored Members and Sponsoring Members with respect to Sponsored Member Trades with haircuts could promote competition. This is because the proposed changes would honor the parties' contractual intent (as described in Item II(A)1(iii) above) and, thus, encourage more term repo activity within the Service. As such, FICC believes that these proposed changes could promote competition.

In addition, FICC does not believe that the proposed correction, clarifications, and conforming changes in Item II(A)1(iv) above would have an impact on competition. These changes would simply provide additional clarity, transparency and consistency to the Rules and not affect Members' rights and obligations. As such, FICC believes that these proposed changes would not have any impact on competition.

(C) Clearing Agency's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

FICC reviewed the proposed rule change with its Sponsoring Members in order to benefit from their expertise. Written comments relating to this proposed rule change have not been received from the Sponsoring Members or any other person. FICC will notify the Commission of any written comments received by FICC.

[56] *Id.*

III. Date of Effectiveness of the Proposed Rule Change, and Timing for Commission Action

Within 45 days of the date of publication of this notice in the **Federal Register** or within such longer period up to 90 days (i) as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the self-regulatory organization consents, the Commission will:

(A) By order approve or disapprove such proposed rule change, or

(B) institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–FICC–2019–007 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549.

All submissions should refer to File Number SR–FICC–2019–007. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of FICC and on DTCC's website (*http://dtcc.com/legal/sec-rule-filings.aspx*). All comments received will be posted without change. Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–FICC–2019–007 and should be submitted on or before January 31, 2020.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[57]

J. Matthew DeLesDernier,

Assistant Secretary.

[FR Doc. 2020–00203 Filed 1–9–20; 8:45 am]

BILLING CODE 8011–01–P

[57] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–87892; File No. SR–C2–2019–028]

Self-Regulatory Organizations; Cboe C2 Exchange, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Amend the Opening Triggers for Its Opening Rotation Process for Equity Options

January 6, 2020

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the ''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on December 23, 2019, Cboe C2 Exchange, Inc. (the ''Exchange'' or ''C2'') filed with the Securities and Exchange Commission (the ''Commission'') the proposed rule change as described in Items I and II below, which Items have been prepared by the Exchange. The Exchange filed the proposal as a ''non-controversial'' proposed rule change pursuant to Section 19(b)(3)(A)(iii) of the Act[3] and Rule 19b–4(f)(6) thereunder.[4] The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange proposes to amend Rule 6.11 (Opening Auction Process) in connection with the opening triggers for

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] 15 U.S.C. 78s(b)(3)(A)(iii).

[4] 17 CFR 240.19b–4(f)(6).

its opening rotation process for the Regular Trading Hours (''RTH'') trading session in equity options.

The text of the proposed rule change is also available on the Exchange's website (*http://markets.cboe.com/us/options/regulation/rule_filings/ctwo/*), at the Exchange's Office of the Secretary, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

The Exchange proposes to amend Rule 6.11 (Opening Auction Process) in connection with the opening triggers for its opening rotation process for the Regular Trading Hours (''RTH'') trading session in equity options. Currently, Rule 6.11(d)(1) governs the RTH opening rotation triggers for equity options, as well as index options. Particularly, regarding equity options, Rule 6.11(d)(1) provides that the System [5] will initiate the opening rotation after a time period (which the Exchange determines for all classes) following the System's observation after 9:30 a.m. of the first disseminated transaction on the primary market in the security underlying an equity option. In order to ensure a more orderly opening process, the Exchange proposes to amend the opening trigger process in order to contemplate the first disseminated quote (in addition to the already included first disseminated transaction) on the primary market in the underlying security in determining whether to initiate the opening rotation, as well as to add an additional timing process following the System's observation of one, but not both, of the opening triggers.

Specifically, the Exchange proposes to include the System's observation of the first disseminated quote on the primary market in the security underlying the equity options as an additional opening trigger for equity options.[6] The Exchange notes this trigger is intended to tie the Exchange's opening process to quoting in the underlying security. The Exchange believes that quoting activity in the underlying market is an additional trigger that generally indicates the presence of post-open price discovery and liquidity in the primary market for the underlying, and, therefore, that the market for the underlying is adequately situated for the commencement of options trading on the underlying. This additional trigger is also consistent with general practice in the industry, as other options exchanges use the first disseminated quote, as well as first disseminated transaction, as an opening trigger for their opening auction processes.[7] As a result, the proposed additional trigger is an industry practice to which market participants are generally already accustomed and will provide for greater consistency in the opening process across the industry. In light of this additional opening trigger, the Exchange also proposes to adopt additional timing specifications prior to the initiation of the opening rotation and contingent upon the System's observation of the first disseminated transaction and/or quote, as proposed, on the primary market in the underlying security. Specifically, under proposed Rule 6.11(d)(1)(A),[8] the System would initiate the opening rotation after an Exchange-determined time period (which it currently does) upon the earlier occurrence of either: (i) The passage of two minutes (or such shorter time as determined by the Exchange) after the System's observation after 9:30 a.m. of either the first disseminated transaction or the first disseminated quote on the primary market in the security underlying an equity option; or (ii) the System's observation after 9:30 a.m. of both the first disseminated transaction and the first disseminated quote on the primary market in the security underlying an equity option.

The proposed additional timing steps in connection with the opening triggers are intended to ensure that the market for the underlying security has had sufficient time to open prior to the initiation of the opening rotation where there is not both a two-sided quote and an execution in the underlying security. By waiting a requisite amount of time after the System observes one of the opening triggers, the proposed process pursuant to proposed Rule 6.11(d)(1)(A)(i) is intended to permit post-opening price discovery to occur in the underlying security prior to the opening of options on the security. Similarly, by initiating the opening rotation upon the System's observation of both opening triggers prior to the passage of two minutes, proposed Rule 6.11(d)(1)(A)(ii) ties the Exchange's opening process to specific market conditions in the underlying security that generally indicate that sufficient post-opening price discovery has occurred prior to the opening of options on the security. To illustrate, if the System were to observe a disseminated quote (or transaction) in the primary market for the underlying security, it would begin the two-minute (or shorter) timer pursuant to proposed Rule 6.11(d)(1)(A)(i). If two minutes then passed without the System's observation of a disseminated transaction (or quote) on the primary market for the underlying security (which would cause the scenario in Rule 6.11(d)(1)(A)(ii) to occur) then it would initiate the opening rotation after a time period determined by the Exchange, as it currently does today. Conversely, if the System were to observe a disseminated quote (or transaction) in the primary market and begin the two minute (or shorter) timer, but then observe a disseminated transaction (or quote) in the primary market before the passage of two minutes (or shorter), it would then, at the time it observed the disseminated transaction (or quote) prior to the passage of two minutes (or shorter), initiate the opening rotation after a period of time determined by the Exchange.

The Exchange notes that the proposed rule change in connection with initiating the opening rotation upon receipt of a trade and a quote in the underlying is consistent with the opening process rules of NYSE Arca.[9] Additionally, the proposed rule change in connection with initiating the opening rotation following the receipt of

[5] *See* C2 Rule 1.1, which defines the ''System'' to mean the automated trading system the Exchange uses for the trading of option contracts.

[6] The quote must be a two-sided quote.

[7] *See* Nasdaq PHLX LLC (''PHLX'') Rule 1017(d)(i); Nasdaq ISE LLC (''ISE'') Options 3 Section 8(c)(1); Nasdaq GEMX LLC (''GEMX'') Options 3 Section 8(c)(1); Nasdaq MRX LLC (''MRX'') Options 3 Section 8(c)(1); Miami International Securities Exchange, LLC (''MIAX'') Rule 503(e); NYSE American, Inc. (''NYSE American'') Rule 952NY; and NYSE Arca, Inc. (''NYSE Arca'') Rule 6.64–O(b).

[8] The Exchange also proposes to format current Rule 6.11(d)(1) into two subparagraphs; subparagraph (d)(1)(A), governing the RTH opening rotation triggers for equity options, and subparagraph (d)(1)(B), governing such for index options. This proposed formatting change will make the rule better organized and easier to follow and understand.

[9] *See* NYSE Arca Rule 6.64–O(b).

either a quote or trade in the underlying and a timed pause is consistent with other options exchanges that have similar timers in place following the receipt of a transaction or quote in the primary market for the underlying security. For example, MIAX's opening process rule currently provides that its opening process may begin following a pause period (no longer than one half second) that, like the proposed rule change, begins upon the dissemination of either a quote or a trade in the underlying security.[10] The Exchange notes that the MIAX opening process rule provides that following the dissemination of either a quote or a trade in the underlying security and the requisite pause period, its opening process will begin upon the occurrence of certain Market Maker quotes submitted on MIAX. The Exchange notes, however, that this is not consequential to the activity or status of the market for the underlying security or the use of an opening quote or trade in the underlying to trigger the initiation of an opening process on an options exchange. The Exchange further notes that the proposed two minute timer (or shorter) is consistent with the timer provided pursuant to the opening process rules on PHLX, ISE, GEMX, and MRX.[11]

2. Statutory Basis

The Exchange believes the proposed rule change is consistent with the Securities Exchange Act of 1934 (the ''Act'') and the rules and regulations thereunder applicable to the Exchange and, in particular, the requirements of Section 6(b) of the Act.[12] Specifically, the Exchange believes the proposed rule change is consistent with the Section 6(b)(5)[13] requirements that the rules of an exchange be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities, to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest. Additionally, the Exchange believes the proposed rule change is consistent with the Section 6(b)(5)[14] requirement that the rules of an exchange not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

The Exchange believes that the proposed rule change to include the first dissemination of a quote on the primary market for the underlying security as an additional opening trigger for equity options would serve to remove impediments to and perfect the mechanism of a free and open market and national market system by incorporating an additional opening trigger into the Exchange's opening process which would help ensure that the primary market for the underlying is adequately situated with the appropriate liquidity and active price discovery in order to open for trading options on the underlying. Additionally, the proposed rule change would foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities because it will align the triggers for its equity options opening rotation with the triggers used by most other options exchanges.[15] The proposed change will benefit investors, as it will create consistency throughout the industry by implementing an additional opening rotation trigger already in place across much of the industry and, thus, already familiar to market participants.

In addition to this, the Exchange believes that the proposed rule change to implement additional timing procedures in connection with the System's observation of the first disseminated transaction and/or quote in the primary market for the underlying security prior to the initiation of the opening rotation would also serve to remove impediments to and perfect the mechanism of a free and open market and national market system by ensuring that stability is present in the underlying markets upon the initiation of the opening rotation to the benefits of investors. The proposed rule change is intended to promote the maintenance of a fair and orderly market and, in general, to protect investors and the public interest by either waiting a requisite amount of time after the System observes one opening trigger in order to allocate enough time to permit the price of the underlying security to stabilize after its opening, or by initiating the opening rotation upon the System's observation of both opening triggers (as proposed), thus tying the Exchange's open to the existence of liquidity on the primary market which generally indicates that sufficient post-opening price discovery has occurred prior to the opening of options on the underlying security. Additionally, the Exchange does not believe that the proposed rule change in connection with initiating trading on the Exchange when the System observes a quote and a trade in the underlying security, or observes either a quote or a trade in the underlying security followed by a pause, which, as proposed would be two minutes (or shorter) would significantly impact investors or the public interest because, as stated, these conditions are consistent with other options exchanges that have substantively the same conditions in place in connection with their opening processes.[16]

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed changes would impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act. The Exchange does not believe that the proposed rule changes would impose any burden on intramarket competition that is not necessary in furtherance of the purposes of the Act, because the proposed additional opening trigger and steps in the opening trigger process would apply in the same manner to all equity options. The proposed rule change impacts a System process that occurs prior to the opening of trading, and merely modifies when the System will initiate an opening rotation. The Exchange also does not believe that the proposed change would impose any burden on intermarket competition that is not necessary in furtherance of the purposes of the Act, because use of the first disseminated quote from the primary market as a trigger for the opening rotation, as well as the combination of both opening triggers, or of one opening trigger plus a pause period of a two minutes (or shorter) prior to initiating the opening rotation, is consistent with the rules of other options exchanges.[17]

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

The Exchange neither solicited nor received comments on the proposed rule change.

[10] *See* MIAX Rule 503(e).

[11] *See* PHLX Options Rule 1017(d)(i); ISE Options 3 Section 8(c)(1); GEMX Options 3 Section 8(c)(1); and MRX Options 3 Section 8(c)(1), each of which begin their opening processes within two minutes (or such shorter time as determined by the Exchange) of the opening trade or quote on the market for the underlying security in the case of equity options (plus the occurrence of another condition as laid out in the exchanges' rules).

[12] 15 U.S.C. 78f(b).

[13] 15 U.S.C. 78f(b)(5).

[14] *Id.*

[15] *See supra* note 7.

[16] *See supra* notes 7, 9, 10, and 11.

[17] *See id.*

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the proposed rule change does not: (i) Significantly affect the protection of investors or the public interest; (ii) impose any significant burden on competition; and (iii) become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to Section 19(b)(3)(A) of the Act [18] and subparagraph (f)(6) of Rule 19b–4 thereunder.[19]

A proposed rule change filed pursuant to Rule 19b–4(f)(6) under the Act [20] normally does not become operative for 30 days after the date of its filing. However, Rule 19b–4(f)(6)(iii) [21] permits the Commission to designate a shorter time if such action is consistent with the protection of investors and the public interest. The Exchange has asked the Commission to waive the 30-day operative delay so that the proposal may become operative upon filing. The Exchange states that the waiver of the operative delay would serve to sooner protect investors by implementing an additional opening trigger and additional timing steps in the Exchange's opening process. Based on the Exchange's representations, the Commission believes that waiver of the 30-day operative delay is consistent with the protection of investors and the public interest. Therefore, the Commission hereby waives the operative delay and designates the proposed rule change operative upon filing.[22]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule change should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's internet comment form (*http://www.sec.gov/rules/sro.shtml);* or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–C2–2019–028 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090.

All submissions should refer to File Number SR–C2–2019–028. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change. Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–C2–2019–028 and should be submitted on or before January 31, 2020.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[23]

J. Matthew DeLesDernier,

Assistant Secretary.

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[18] 15 U.S.C. 78s(b)(3)(A).

[19] 17 CFR 240.19b–4(f)(6). In addition, Rule 19b–4(f)(6)(iii) requires a self-regulatory organization to give the Commission written notice of its intent to file the proposed rule change, along with a brief description and text of the proposed rule change, at least five business days prior to the date of filing of the proposed rule change, or such shorter time as designated by the Commission. The Exchange has satisfied this requirement.

[20] 17 CFR 240.19b–4(f)(6).

[21] 17 CFR 240.19b–4(f)(6)(iii).

[22] For purposes only of waiving the 30-day operative delay, the Commission also has considered the proposed rule's impact on efficiency, competition, and capital formation. *See* 15 U.S.C. 78c(f).

[23] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–87894; File No. SR–CBOE–2020–002]

Self-Regulatory Organizations; Cboe Exchange, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Amend the Opening Triggers for its Opening Rotation Process for Equity Options

January 6, 2020.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the ''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on January 2, 2020, Cboe Exchange, Inc. (the ''Exchange'' or ''Cboe Options'') filed with the Securities and Exchange Commission (the ''Commission'') the proposed rule change as described in Items I and II below, which Items have been prepared by the Exchange. The Exchange filed the proposal as a ''non-controversial'' proposed rule change pursuant to Section 19(b)(3)(A)(iii) of the Act [3] and Rule 19b–4(f)(6) thereunder.[4] The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

Cboe Exchange, Inc. (the ''Exchange'' or ''Cboe Options'') proposes to amend the opening triggers for its opening rotation process for equity options. The text of the proposed rule change is provided in Exhibit 5.

The text of the proposed rule change is also available on the Exchange's website (*http://www.cboe.com/AboutCBOE/CBOELegalRegulatoryHome.aspx*), at the Exchange's Office of the Secretary, and at the Commission's Public Reference Room.

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] 15 U.S.C. 78s(b)(3)(A)(iii).

[4] 17 CFR 240.19b–4(f)(6).

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

The Exchange proposes to amend Rule 5.31 (Opening Auction Process) in connection with the opening triggers for its opening rotation process for the Regular Trading Hours (''RTH'') trading session in equity options. Currently, Rule 5.31(d)(1) governs the RTH opening rotation triggers for equity options, as well as index options. Particularly, regarding equity options, Rule 5.31(d)(1) provides that the System [5] initiates the opening rotation after a time period (which the Exchange determines for all classes) following the System's observation after 9:30 a.m. of the first disseminated transaction on the primary market in the security underlying an equity option. In order to ensure a more orderly opening process, the Exchange proposes to amend the opening trigger process in order to contemplate the first disseminated quote (in addition to the already included first disseminated transaction) on the primary market in the underlying security in determining whether to initiate the opening rotation, as well as to add an additional timing process following the System's observation of one, but not both, of the opening triggers.

Specifically, the Exchange proposes to include the System's observation of the first disseminated quote on the primary market in the security underlying the equity options as an additional opening trigger for equity options.[6] The Exchange notes this trigger is intended to tie the Exchange's opening process to quoting in the underlying security. The Exchange believes that quoting activity in the underlying market is an additional trigger that generally indicates the presence of post-open price discovery and liquidity in the primary market for the underlying, and, therefore, that the market for the underlying is adequately situated for the commencement of options trading on the underlying. This additional trigger is also consistent with general practice in the industry, as other options exchanges use the first disseminated quote, as well as first disseminated transaction, as an opening trigger for their opening auction processes.[7] As a result, the proposed additional trigger is an industry practice to which market participants are generally already accustomed and will provide for greater consistency in the opening process across the industry. In light of this additional opening trigger, the Exchange also proposes to adopt additional timing specifications prior to the initiation of the opening rotation and contingent upon the System's observation of the first disseminated transaction and/or quote, as proposed, on the primary market in the underlying security. Specifically, under proposed Rule 5.31(d)(1)(A),[8] the System would initiate the opening rotation after an Exchange-determined time period (which it currently does) upon the earlier occurrence of either: (i) The passage of two minutes (or such shorter time as determined by the Exchange) after the System's observation after 9:30 a.m. of either the first disseminated transaction or the first disseminated quote on the primary market in the security underlying an equity option; or (ii) the System's observation after 9:30 a.m. of both the first disseminated transaction and the first disseminated quote on the primary market in the security underlying an equity option.

The proposed additional timing steps in connection with the opening triggers are intended to ensure that the market for the underlying security has had sufficient time to open prior to the initiation of the opening rotation where there is not both a two-sided quote and an execution in the underlying security. By waiting a requisite amount of time after the System observes one of the opening triggers, the proposed process pursuant to proposed Rule 5.31(d)(1)(A)(i) is intended to permit post-opening price discovery to occur in the underlying security prior to the opening of options on the security. Similarly, by initiating the opening rotation upon the System's observation of both opening triggers prior to the passage of two minutes, proposed Rule 5.31(d)(1)(A)(ii) ties the Exchange's opening process to specific market conditions in the underlying security that generally indicate that sufficient post-opening price discovery has occurred prior to the opening of options on the security. To illustrate, if the System were to observe a disseminated quote (or transaction) in the primary market for the underlying security, it would begin the two-minute (or shorter) timer pursuant to proposed Rule 5.31(d)(1)(A)(i). If two minutes then passed without the System's observation of a disseminated transaction (or quote) on the primary market for the underlying security (which would cause the scenario in Rule 5.31(d)(1)(A)(ii) to occur) then it would initiate the opening rotation after a time period determined by the Exchange, as it currently does today. Conversely, if the System were to observe a disseminated quote (or transaction) in the primary market and begin the two minute (or shorter) timer, but then observe a disseminated transaction (or quote) in the primary market before the passage of two minutes (or shorter), it would then, at the time it observed the disseminated transaction (or quote) prior to the passage of two minutes (or shorter), initiate the opening rotation after a period of time determined by the Exchange.

The Exchange notes that the proposed rule change in connection with initiating the opening rotation upon receipt of a trade and a quote in the underlying is consistent with the opening process rules of NYSE Arca.[9] Additionally, the proposed rule change in connection with initiating the opening rotation following the receipt of either a quote or trade in the underlying and a timed pause is consistent with other options exchanges that have similar timers in place following the receipt of a transaction or quote in the primary market for the underlying security. For example, MIAX's opening

[5] *See* Cboe Options Rule 1.1, which defines the ''System'' as the Exchange's hybrid trading platform that integrates electronic and open outcry trading of option contracts on the Exchange, and includes any connectivity to the foregoing trading platform that is administered by or on behalf of the Exchange, such as a communications hub.

[6] The quote must be a two-sided quote.

[7] *See* Nasdaq PHLX LLC (''PHLX'') Rule 1017(d)(i); Nasdaq ISE LLC (''ISE'') Options 3 Section 8(c)(1); Nasdaq GEMX LLC (''GEMX'') Options 3 Section 8(c)(1); Nasdaq MRX LLC (''MRX'') Options 3 Section 8(c)(1); Miami International Securities Exchange, LLC (''MIAX'') Rule 503(e); NYSE American, Inc. (''NYSE American'') Rule 952NY; and NYSE Arca, Inc. (''NYSE Arca'') Rule 6.64–O(b).

[8] The Exchange also proposes to format current Rule 5.31(d)(1) into three subparagraphs; subparagraph (d)(1)(A), governing the RTH opening rotation triggers for equity options, subparagraph (d)(1)(B), governing such for index options, and subparagraph (d)(1)(C), governing such for VIX Index options. This proposed formatting change will make the rule better organized and easier to follow and understand.

[9] *See* NYSE Arca Rule 6.64–O(b).

process rule currently provides that its opening process may begin following a pause period (no longer than one half second) that, like the proposed rule change, begins upon the dissemination of either a quote or a trade in the underlying security.[10] The Exchange notes that the MIAX opening process rule provides that following the dissemination of either a quote or a trade in the underlying security and the requisite pause period, its opening process will begin upon the occurrence of certain Market Maker quotes submitted on MIAX. The Exchange notes, however, that this is not consequential to the activity or status of the market for the underlying security or the use of an opening quote or trade in the underlying to trigger the initiation of an opening process on an options exchange. The Exchange further notes that the proposed two minute timer (or shorter) is consistent with the timer provided pursuant to the opening process rules on PHLX, ISE, GEMX, and MRX.[11]

2. Statutory Basis

The Exchange believes the proposed rule change is consistent with the Securities Exchange Act of 1934 (the ''Act'') and the rules and regulations thereunder applicable to the Exchange and, in particular, the requirements of Section 6(b) of the Act.[12] Specifically, the Exchange believes the proposed rule change is consistent with the Section 6(b)(5)[13] requirements that the rules of an exchange be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities, to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest. Additionally, the Exchange believes the proposed rule change is consistent with the Section 6(b)(5)[14] requirement that the rules of an exchange not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

The Exchange believes that the proposed rule change to include the first dissemination of a quote on the primary market for the underlying security as an additional opening trigger for equity options would serve to remove impediments to and perfect the mechanism of a free and open market and national market system by incorporating an additional opening trigger into the Exchange's opening process which would help ensure that the primary market for the underlying is adequately situated with the appropriate liquidity and active price discovery in order to open for trading options on the underlying. Additionally, the proposed rule change would foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities because it will align the triggers for its equity options opening rotation with the triggers used by most other options exchanges.[15] The proposed change will benefit investors, as it will create consistency throughout the industry by implementing an additional opening rotation trigger already in place across much of the industry and, thus, already familiar to market participants.

In addition to this, the Exchange believes that the proposed rule change to implement additional timing procedures in connection with the System's observation of the first disseminated transaction and/or quote in the primary market for the underlying security prior to the initiation of the opening rotation would also serve to remove impediments to and perfect the mechanism of a free and open market and national market system by ensuring that stability is present in the underlying markets upon the initiation of the opening rotation to the benefits of investors. The proposed rule change is intended to promote the maintenance of a fair and orderly market and, in general, to protect investors and the public interest by either waiting a requisite amount of time after the System observes one opening trigger in order to allocate enough time to permit the price of the underlying security to stabilize after its opening, or by initiating the opening rotation upon the System's observation of both opening triggers (as proposed), thus tying the Exchange's open to the existence of liquidity on the primary market which generally indicates that sufficient post-opening price discovery has occurred prior to the opening of options on the underlying security. Additionally, the Exchange does not believe that the proposed rule change in connection with initiating trading on Cboe Options when the System observes a quote and a trade in the underlying security, or observes either a quote or a trade in the underlying security followed by a pause, which, as proposed would be two minutes (or shorter) would significantly impact investors or the public interest because, as stated, these conditions are consistent with other options exchanges that have substantively the same conditions in place in connection with their opening processes.[16]

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed changes would impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act. The Exchange does not believe that the proposed rule changes would impose any burden on intramarket competition that is not necessary in furtherance of the purposes of the Act, because the proposed additional opening trigger and steps in the opening trigger process would apply in the same manner to all equity options. The proposed rule change impacts a System process that occurs prior to the opening of trading, and merely modifies when the System will initiate an opening rotation. The Exchange also does not believe that the proposed change would impose any burden on intermarket competition that is not necessary in furtherance of the purposes of the Act, because use of the first disseminated quote from the primary market as a trigger for the opening rotation, as well as the combination of both opening triggers, or of one opening trigger plus a pause period of a two minutes (or shorter) prior to initiating the opening rotation, is consistent with the rules of other options exchanges.[17]

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

The Exchange neither solicited nor received comments on the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the proposed rule change does not: (i) Significantly affect the

[10] *See* MIAX Rule 503(e).

[11] *See* PHLX Options Rule 1017(d)(i); ISE Options 3 Section 8(c)(1); GEMX Options 3 Section 8(c)(1); and MRX Options 3 Section 8(c)(1), each of which begin their opening processes within two minutes (or such shorter time as determined by the Exchange) of the opening trade or quote on the market for the underlying security in the case of equity options (plus the occurrence of another condition as laid out in the exchanges' rules).

[12] 15 U.S.C. 78f(b).

[13] 15 U.S.C. 78f(b)(5).

[14] *Id.*

[15] *See supra* note 7.

[16] *See supra* notes 7, 9, 10, and 11.

[17] *See id.*

protection of investors or the public interest; (ii) impose any significant burden on competition; and (iii) become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to Section 19(b)(3)(A) of the Act [18] and subparagraph (f)(6) of Rule 19b–4 thereunder.[19]

A proposed rule change filed pursuant to Rule 19b–4(f)(6) under the Act [20] normally does not become operative for 30 days after the date of its filing. However, Rule 19b–4(f)(6)(iii) [21] permits the Commission to designate a shorter time if such action is consistent with the protection of investors and the public interest. The Exchange has asked the Commission to waive the 30-day operative delay so that the proposal may become operative upon filing. The Exchange states that the waiver of the operative delay would serve to sooner protect investors by implementing an additional opening trigger and additional timing steps in the Exchange's opening process. Based on the Exchange's representations, the Commission believes that waiver of the 30-day operative delay is consistent with the protection of investors and the public interest. Therefore, the Commission hereby waives the operative delay and designates the proposed rule change operative upon filing.[22]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule change should be approved or disapproved.

[18] 15 U.S.C. 78s(b)(3)(A).

[19] 17 CFR 240.19b–4(f)(6). In addition, Rule 19b–4(f)(6)(iii) requires a self-regulatory organization to give the Commission written notice of its intent to file the proposed rule change, along with a brief description and text of the proposed rule change, at least five business days prior to the date of filing of the proposed rule change, or such shorter time as designated by the Commission. The Exchange has satisfied this requirement.

[20] 17 CFR 240.19b–4(f)(6).

[21] 17 CFR 240.19b–4(f)(6)(iii).

[22] For purposes only of waiving the 30-day operative delay, the Commission also has considered the proposed rule's impact on efficiency, competition, and capital formation. *See* 15 U.S.C. 78c(f).

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments:

- Use the Commission's internet comment form (*http://www.sec.gov/rules/sro.shtml);* or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–CBOE–2020–002 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090.

All submissions should refer to File Number SR–CBOE–2020–002. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (*http://www.sec.gov/rules/sro.shtml).* Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change. Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–CBOE–2020–002 and should be submitted on or before January 31, 2020.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[23]

J. Matthew DeLesDernier,

Assistant Secretary.

[FR Doc. 2020–00202 Filed 1–9–20; 8:45 am]

BILLING CODE 8011–01–P

[23] 17 CFR 200.30–3(a)(12).

SMALL BUSINESS ADMINISTRATION

Reporting and Recordkeeping Requirements Under OMB Review

AGENCY: Small Business Administration.

ACTION: 30-Day notice.

SUMMARY: The Small Business Administration (SBA) is publishing this notice to comply with requirements of the Paperwork Reduction Act (PRA) requires agencies to submit proposed reporting and recordkeeping requirements to OMB for review and approval, and to publish a notice in the **Federal Register** notifying the public that the agency has made such a submission. This notice also allows an additional 30 days for public comments.

DATES: Submit comments on or before February 10, 2020.

ADDRESSES: Comments should refer to the information collection by name and/or OMB Control Number and should be sent to: *Agency Clearance Officer,* Curtis Rich, Small Business Administration, 409 3rd Street SW, 5th Floor, Washington, DC 20416; and *SBA Desk Officer,* Office of Information and Regulatory Affairs, Office of Management and Budget, New Executive Office Building, Washington, DC 20503.

FOR FURTHER INFORMATION CONTACT: Curtis Rich, Agency Clearance Officer, (202) 205–7030, *curtis.rich@sba.gov.*

Copies: A copy of the Form OMB 83–1, supporting statement, and other documents submitted to OMB for review may be obtained from the Agency Clearance Officer.

SUPPLEMENTARY INFORMATION: The U.S. Small Business Administration will collect, analyze, and interpret information gathered through this generic clearance to identify services' accessibility, navigation, and use by customers, and make improvements in service delivery based on customer insights gathered through developing an understanding of the user experience interacting with Government.

Solicitation of Public Comments

Comments may be submitted on (a) whether the collection of information is

necessary for the agency to properly perform its functions; (b) whether the burden estimates are accurate; (c) whether there are ways to minimize the burden, including through the use of automated techniques or other forms of information technology; and (d) whether there are ways to enhance the quality, utility, and clarity of the information.

Summary of Information Collections

Title: Generic Clearance for SBA Customer Experience Data Collections.
Frequency: On Occasion.
SBA Form Numbers: N/A.
Description of Respondents: SBA Customers.
Responses: 501,550.
Annual Burden: 251,125.

Curtis Rich,
Management Analyst.
[FR Doc. 2020–00209 Filed 1–9–20; 8:45 am]
BILLING CODE 8026–03–P

SOCIAL SECURITY ADMINISTRATION

[Docket No. SSA–2019–0050]

Notice on Penalty Inflation Adjustments for Civil Monetary Penalties

AGENCY: Social Security Administration.

ACTION: Notice announcing updated penalty inflation adjustments for civil monetary penalties for 2020.

SUMMARY: The Social Security Administration is giving notice of its updated maximum civil monetary penalties. These amounts are effective from January 15, 2020 through January 14, 2021. These figures represent an annual adjustment for inflation. The updated figures and notification are required by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (the 2015 Act).

FOR FURTHER INFORMATION CONTACT: Sotiris Planzos, Acting Counsel for Investigations and Enforcement, Room 2–ME–5, 6401 Security Boulevard, Baltimore, MD 21235–6401, 410–965–3498. For information on eligibility or filing for benefits, call the Social Security Administration's national toll-free number, 1–800–772–1213 or TTY 1–800–325–0778, or visit the Social Security Administration's internet site, Social Security Online, at *http://www.socialsecurity.gov.*

SUPPLEMENTARY INFORMATION: On June 27, 2016, pursuant to the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (the 2015 Act),[1] we published an interim final rule to adjust the level of civil monetary penalties (CMP) under sections 1129 and 1140 of the Social Security Act, 42 U.S.C. 1320a-8 and 1320b-10, with an initial ''catch-up'' adjustment effective August 1, 2016.[2] We announced in the interim final rule that for any future adjustments, we would publish a notice in the **Federal Register** to announce the new amounts. The annual inflation adjustment in subsequent years must be a cost-of-living adjustment based on any increases in the October Consumer Price Index for All Urban Consumers (CPI–U) (not seasonally adjusted) each year.[3] Inflation adjustment increases must be rounded to the nearest multiple of $1.[4] We last updated the maximum penalty amounts effective January 15, 2019.[5] Based on Office of Management and Budget (OMB) guidance,[6] the information below serves as public notice of the new maximum penalty amounts for 2020. The adjustment results in the following new maximum penalties, which will be effective as of January 15, 2020.

Section 1129 CMPs (42 U.S.C. 1320a–8):

$7,975.00 (current maximum per violation for fraud facilitators in a position of trust) × 1.01764 (OMB-issued inflationary adjustment multiplier) = $8,115.68. When rounded to the nearest dollar, the new maximum penalty is $8,116.00.
$8,457.00 (current maximum per violation for all other violators) × 1.01764 (OMB-issued inflationary adjustment multiplier) = $8,606.18. When rounded to the nearest dollar, the new maximum penalty is $8,606.00.

Section 1140 CMPs (42 U.S.C. 1320b–10):

$10,519.00 (current maximum per violation for all violations other than broadcast or telecasts) × 1.01764 (OMB-issued inflationary adjustment multiplier) = $10,704.56. When rounded to the nearest dollar, the new maximum penalty is $10,705.00.
$52,596.00 (current maximum per broadcast or telecast) × 1.01764 (OMB-issued inflationary adjustment multiplier;) = $53,523.79. When rounded to the nearest dollar, the new maximum penalty is $53,524.00.

Dated: January 2, 2020.

Gail S. Ennis,
Inspector General, Social Security Administration.
[FR Doc. 2020–00236 Filed 1–9–20; 8:45 am]
BILLING CODE P

[1] *See https://www.congress.gov/bill/114th-congress/house-bill/1314/text. See also* 81 FR 41438, *https://www.federalregister.gov/documents/2016/06/27/2016-13241/penalty-inflation-adjustments-for-civil-money-penalties.*

[2] *See* 81 FR 41438, *https://www.federalregister.gov/documents/2016/06/27/2016-13241/penalty-inflation-adjustments-for-civil-money-penalties.*

[3] *See* OMB Memorandum, Implementation of the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015, M–16–06, p. 1 (February 24, 2016), *https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2016/m-16-06.pdf. See also* 81 FR 41438, *https://www.federalregister.gov/documents/2016/06/27/2016-13241/penalty-inflation-adjustments-for-civil-money-penalties.*

[4] OMB Memorandum, Implementation of the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015, M–16–06, p. 3 (February 24, 2016), *https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2016/m-16-06.pdf. See also* 81 FR 41438, *https://www.federalregister.gov/documents/2016/06/27/2016-13241/penalty-inflation-adjustments-for-civil-money-penalties.*

[5] *See* 84 FR 360, *https://www.federalregister.gov/documents/2019/01/24/2019-00091/notice-on-penalty-inflation-adjustments-for-civil-monetary-penalties.*

[6] *See https://www.whitehouse.gov/wp-content/uploads/2019/12/M-20-05.pdf.*

DEPARTMENT OF STATE

[Public Notice:10996]

In the Matter of the Designation of the Asa'ib Ahl al-Haq (and other aliases) as a Foreign Terrorist Organization

Based upon a review of the Administrative Record assembled in this matter, and in consultation with the Attorney General and the Secretary of the Treasury, I conclude that there is a sufficient factual basis to find that the relevant circumstances described in section 219 of the Immigration and Nationality Act, as amended (hereinafter ''INA'') (8 U.S.C. 1189), exist with respect to Asa'ib Ahl al-Haq, also known as AAH; Asa'ib Ahl al-Haq min Al-Iraq; Asaib al Haq; Asa'ib Ahl Al-Haqq; League of the Righteous; Khazali Network; Khazali Special Group; Qazali Network; The People of the Cave; Khazali Special Groups Network; Al-Tayar al-Risali; and The Missionary Current.

Therefore, I hereby designate the aforementioned organization and its aliases as a foreign terrorist organization pursuant to section 219 of the INA.

This determination shall be published in the **Federal Register**.

Dated: January 2, 2020.

Michael R. Pompeo,
Secretary of State.
[FR Doc. 2020–00253 Filed 1–9–20; 8:45 am]
BILLING CODE 4710–AD–P

DEPARTMENT OF STATE

[Public Notice: 10993]

Designation of Laith al-Khazali as a Specially Designated Global Terrorist

Acting under the authority of and in accordance with section 1(a)(ii)(A) of Executive Order 13224 of September 23, 2001, as amended by Executive Order 13268 of July 2, 2002, Executive Order 13284 of January 23, 2003, and Executive Order 13886 of September 9, 2019, I hereby determine that the person known as Laith al-Khazali, also known as Layth al-Khaz'ali, also known as Layth Hadi Sa'id al-Khazali, also known as Layith Hadi Sa'id al-Khaz'ali, is a foreign person who has committed or has attempted to commit, or poses a significant risk of committing, or has participated in training to commit, acts of terrorism that threaten the security of U.S. nationals or the national security, foreign policy, or economy of the United States.

Consistent with the determination in section 10 of Executive Order 13224 that prior notice to persons determined to be subject to the Order who might have a constitutional presence in the United States would render ineffectual the blocking and other measures authorized in the Order because of the ability to transfer funds instantaneously, I determine that no prior notice needs to be provided to any person subject to this determination who might have a constitutional presence in the United States, because to do so would render ineffectual the measures authorized in the Order.

This notice shall be published in the **Federal Register**.

Dated: January 2, 2020

Michael R. Pompeo,

Secretary of State.

[FR Doc. 2020–00242 Filed 1–9–20; 8:45 am]

BILLING CODE 4710–AD–P

DEPARTMENT OF STATE

[Public Notice:10994]

Designation of Qays al-Khazali as a Specially Designated Global Terrorist

Acting under the authority of and in accordance with section 1(a)(ii)(A) of Executive Order 13224 of September 23, 2001, as amended by Executive Order 13268 of July 2, 2002, Executive Order 13284 of January 23, 2003, and Executive Order 13886 of September 9, 2019, I hereby determine that the person known as Qays al-Khazali, also known as Qays al-Khaz'ali, also known as Qais al-Khazali, also known as Qays Hadi Sa'id al-Khazali, is a foreign person who has committed or has attempted to commit, or poses a significant risk of committing, or has participated in training to commit, acts of terrorism that threaten the security of U.S. nationals or the national security, foreign policy, or economy of the United States.

Consistent with the determination in section 10 of Executive Order 13224 that prior notice to persons determined to be subject to the Order who might have a constitutional presence in the United States would render ineffectual the blocking and other measures authorized in the Order because of the ability to transfer funds instantaneously, I determine that no prior notice needs to be provided to any person subject to this determination who might have a constitutional presence in the United States, because to do so would render ineffectual the measures authorized in the Order.

This notice shall be published in the **Federal Register**.

Dated: January 2, 2020.

Michael R. Pompeo,

Secretary of State.

[FR Doc. 2020–00243 Filed 1–9–20; 8:45 am]

BILLING CODE 4710–AD–P

DEPARTMENT OF STATE

[Public Notice:10995]

Designation of Asa'ib Ahl al-Haq as a Specially Designated Global Terrorist

Acting under the authority of and in accordance with section 1(a)(ii)(A) of Executive Order 13224 of September 23, 2001, as amended by Executive Order 13268 of July 2, 2002, Executive Order 13284 of January 23, 2003, and Executive Order 13886 of September 9, 2019, I hereby determine that the person known as Asa'ib Ahl al-Haq, also known as AAH, also known as Asa'ib Ahl al-Haq min Al-Iraq, also known as Asaib al Haq, also known as Asa'ib Ahl Al-Haqq, also known as League of the Righteous, also known as Khazali Network, also known as Khazali Special Group, also known as Qazali Network, also known as The People of the Cave, also known as Khazali Special Groups Network, also known as Al-Tayar al-Risali, also known as The Missionary Current, is a foreign person who has committed or has attempted to commit, or poses a significant risk of committing, or has participated in training to commit, acts of terrorism that threaten the security of U.S. nationals or the national security, foreign policy, or economy of the United States.

Consistent with the determination in section 10 of Executive Order 13224 that prior notice to persons determined to be subject to the Order who might have a constitutional presence in the United States would render ineffectual the blocking and other measures authorized in the Order because of the ability to transfer funds instantaneously, I determine that no prior notice needs to be provided to any person subject to this determination who might have a constitutional presence in the United States, because to do so would render ineffectual the measures authorized in the Order.

This notice shall be published in the **Federal Register**.

Dated: January 2, 2020.

Michael R. Pompeo,

Secretary of State.

[FR Doc. 2020–00244 Filed 1–9–20; 8:45 am]

BILLING CODE 4710–AD–P

SURFACE TRANSPORTATION BOARD

[Docket No. AB 303 (Sub-No. 54X)]

Wisconsin Central Ltd.—Discontinuance of Service Exemption—in Rusk and Price Counties, Wis.

Wisconsin Central Ltd. (WCL) has filed a verified notice of exemption under 49 CFR part 1152 subpart F—*Exempt Abandonments and Discontinuances of Service* to discontinue service over an approximately 32-mile rail line between milepost 137.00 at Tony in Dewey Township, Rusk County, Wis., and milepost 169.00 at Prentice in the Town of Prentice, Price County, Wis. (the Line). The Line traverses U.S. Postal Service ZIP Codes 54563, 54526, 54530, 54537, 54515, and 54556.

WCL has certified that: (1) No local traffic has moved over the Line for two years; (2) any overhead traffic on the Line can be rerouted over other lines; (3) no formal complaint filed by a user of rail service on the Line (or by a state or local government entity acting on behalf of such user) regarding cessation of service over the Line either is pending with the Surface Transportation Board (Board) or with any U.S. District Court or has been decided in favor of complainant within the two-year period; and (4) the requirements at 49 CFR 1105.12 (newspaper publication) and 49 CFR 1152.50(d)(1) (notice to governmental agencies) have been met.

As a condition to this exemption, any employee adversely affected by the discontinuance of service shall be protected under *Oregon Short Line*

Railroad—Abandonment Portion Goshen Branch Between Firth & Ammon, in Bingham & Bonneville Counties, Idaho, 360 I.C.C. 91 (1979). To address whether this condition adequately protects affected employees, a petition for partial revocation under 49 U.S.C. 10502(d) must be filed.

Provided no formal expression of intent to file an offer of financial assistance (OFA) [1] to subsidize continued rail service has been received, this exemption will be effective on February 9, 2020, unless stayed pending reconsideration.[2] Petitions to stay that do not involve environmental issues must be filed by January 17, 2020, and formal expressions of intent to file an OFA to subsidize continued rail service under 49 CFR 1152.27(c)(2) [3] must be filed by January 21, 2020.[4] Petitions for reconsideration must be filed by January 30, 2020, with the Surface Transportation Board, 395 E Street SW, Washington, DC 20423–0001.

A copy of any petition filed with the Board should be sent to WCL's representative, Bradon J. Smith, Fletcher & Sippel LLC, 29 N Wacker Drive, Suite 800, Chicago, IL 60606.

If the verified notice contains false or misleading information, the exemption is void ab initio.

Board decisions and notices are available at *www.stb.gov*.

Decided: January 6, 2020.

By the Board, Allison C. Davis, Director, Office of Proceedings.

Tammy Lowery,

Clearance Clerk.

[FR Doc. 2020–00227 Filed 1–9–20; 8:45 am]

BILLING CODE 4915–01–P

[1] Persons interested in submitting an OFA to subsidize continued rail service must first file a formal expression of intent to file an offer, indicating the intent to file an OFA for subsidy and demonstrating that they are preliminarily financially responsible. *See* 49 CFR 1152.27(c)(2)(i).

[2] WCL supplemented its verified notice on December 23, 2019, which will be considered the filing date for the purpose of calculating the effective date of the exemption.

[3] The filing fee for OFAs can be found at 49 CFR 1002.2(f)(25).

[4] Because this is a discontinuance proceeding and not an abandonment, trail use/rail banking and public use conditions are not appropriate. Because there will be an environmental review during abandonment, this discontinuance does not require environmental review.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. FAA–2019–0895]

Agency Information Collection Activities: Requests for Comments; Clearance of New Approval of Information Collection: Employee Assault Prevention and Response Plan

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice and request for comments.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, FAA invites public comments about our intention to request the Office of Management and Budget (OMB) approval for a new information collection. The **Federal Register** Notice with a 60-day comment period soliciting comments on the following collection of information was published on November 1, 2019 (84 FR 58818). The collection involves submission of Employee Assault Prevention and Response Plans (EAPRP) for customer service agents of certificate holders conducting operations under Title 14 of the Code of Federal Regulations (CFR) part 121. The certificate holders will submit the information to be collected to the FAA for review and acceptance as required by Section 551 of Public Law 115–254, the FAA Reauthorization Act of 2018.

DATES: Written comments should be submitted by February 10, 2020.

ADDRESSES: Interested persons are invited to submit written comments on the proposed information collection to the Office of Information and Regulatory Affairs, Office of Management and Budget. Comments should be addressed to the attention of the Desk Officer, Department of Transportation/FAA, and sent via electronic mail to *oira_submission@omb.eop.gov,* or faxed to (202) 395–6974, or mailed to the Office of Information and Regulatory Affairs, Office of Management and Budget, Docket Library, Room 10102, 725 17th Street NW, Washington, DC 20503.

FOR FURTHER INFORMATION CONTACT: Daniel T. Ronneberg by email at: *Dan.Ronneberg@faa.gov;* phone: 202–267–1612.

SUPPLEMENTARY INFORMATION:

Public Comments Invited: You are asked to comment on any aspect of this information collection, including (a) Whether the proposed collection of information is necessary for FAA's performance; (b) the accuracy of the estimated burden; (c) ways for FAA to enhance the quality, utility and clarity of the information collection; and (d) ways that the burden could be minimized without reducing the quality of the collected information. The agency will summarize and/or include your comments in the request for OMB's clearance of this information collection.

OMB Control Number: 2120–XXXX.

Title: Employee Assault Prevention and Response Plan.

Form Numbers: There are no forms associated with this collection.

Type of Review: Clearance of a new information collection.

Background: The **Federal Register** Notice with a 60-day comment period soliciting comments on the following collection of information was published on November 1, 2019 (84 FR 58818). On October 5, 2018, Congress enacted Public Law 115–254, the FAA Reauthorization Act of 2018 (''the Act''). Section 551 of the Act required air carriers operating under 14 CFR part 121 to submit to the FAA for review and acceptance an Employee Assault Prevention and Response Plan (EAPRP) related to the customer service agents of the air carrier that is developed in consultation with the labor union representing such agents. Section 551(b) of the Act contains the required contents of the EAPRP, including reporting protocols for air carrier customer service agents who have been the victim of a verbal or physical assault.

Respondents: 70 Part 121 Air Carriers.

Frequency: Once for submission of the plan.

Estimated Average Burden per Response: 20 hours for air carriers submitting the plan for review and acceptance.

Estimated Total Annual Burden: 20 hours per air carriers submitting the plan for review and acceptance.

Issued in Washington, DC, on January 7, 2020.

Sandra L. Ray,

Aviation Safety Inspector, FAA, Policy Integration Branch, AFS–270.

[FR Doc. 2020–00229 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket Number FRA–2019–0096]

Petition for Waiver of Compliance

Under part 211 of title 49 Code of Federal Regulations (CFR), this document provides the public notice that on October 30, 2019, the National Railroad Passenger Corporation

(Amtrak) petitioned the Federal Railroad Administration (FRA) for a waiver of compliance from certain provisions of the Federal railroad safety regulations contained at 49 CFR part 238. FRA assigned the petition Docket Number FRA–2019–0096.

Specifically, Amtrak has petitioned FRA for a waiver from the requirements of 49 CFR 238.111(a), pre-revenue service acceptance testing, for Siemens Charger locomotives, ALC–42 variants included, to operate across the entirety of Amtrak's operating network. Following FRA's correspondence to Amtrak dated May 16, 2019, Amtrak began to perform a select number of SC–44 Charger performance tests on several long-distance network routes. Results have been generally positive thus far with a low number of correctional recommendations sent back to the Original Equipment Manufacturer (OEM). Amtrak intends to perform additional SC–44 testing in 2020 to further validate the Charger platform in a long-distance environment prior to receiving ALC–42 deliveries.

Since the receipt of FRA's May 16, 2019 correspondence, Amtrak has also provided to FRA the entirety of the design documentation received to date from Siemens for the ALC–42 procurement. Most of these ALC–42 preliminary design review documents are the SC–44 final design documents. These include designs of the suspension system, wheel profile, crash energy management, fuel tank, and other car body drawings. Further, no changes to the dimensions or car body profile of the locomotive will vary between the ALC–42 or the SC–44. The ALC–42 will have a minimal (<0.5%) empty weight variance due to different internal components such as head-end power (HEP) transformer and cab signal, and a minimal (<2.0%) loaded gross weight variance due to increased fuel/diesel exhaust fluid (DEF)/sand capacity than the SC–44. Amtrak states these small weight variances reside below the floor and therefore should have negligible effect from low center of gravity. The other notable differences between the two platform versions will reside within the cab (additional positive train control systems, screen interfaces) and inside the engine room (different fuel filtration, HEP inverter, brake grid, etc.).

Based on the above and the Charger platform testing that has been performed to date, Amtrak requests a waiver from the requirements of 49 CFR 238.111(a) testing for Siemens Charger locomotives, ALC–42 variants included.

A copy of the petition, as well as any written communications concerning the petition, is available for review online at *www.regulations.gov* and in person at the U.S. Department of Transportation's (DOT) Docket Operations Facility, 1200 New Jersey Ave. SE, W12–140, Washington, DC 20590. The Docket Operations Facility is open from 9 a.m. to 5 p.m., Monday through Friday, except Federal Holidays.

Interested parties are invited to participate in these proceedings by submitting written views, data, or comments. FRA does not anticipate scheduling a public hearing in connection with these proceedings since the facts do not appear to warrant a hearing. If any interested parties desire an opportunity for oral comment and a public hearing, they should notify FRA, in writing, before the end of the comment period and specify the basis for their request.

All communications concerning these proceedings should identify the appropriate docket number and may be submitted by any of the following methods:

- *Website: http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* Docket Operations Facility, U.S. Department of Transportation, 1200 New Jersey Ave. SE, W12–140, Washington, DC 20590.
- *Hand Delivery:* 1200 New Jersey Ave. SE, Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

Communications received by February 24, 2020 will be considered by FRA before final action is taken. Comments received after that date will be considered if practicable.

Anyone can search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the comment (or signing the document, if submitted on behalf of an association, business, labor union, etc.). Under 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its processes. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *https://www.transportation.gov/privacy.* See also *https://www.regulations.gov/privacyNotice* for the privacy notice of *regulations.gov.*

Issued in Washington, DC.

John Karl Alexy,

Associate Administrator for Railroad Safety, Chief Safety Officer.

[FR Doc. 2020–00231 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket Number FRA–2019–0106]

Petition for Waiver of Compliance

Under part 211 of title 49 Code of Federal Regulations (CFR), this document provides the public notice that on December 4, 2019, Caltrain petitioned the Federal Railroad Administration (FRA) for a waiver of compliance from certain provisions of the Federal railroad safety regulations contained at 49 CFR part 238, Passenger Equipment Safety Standards. FRA assigned the petition Docket Number FRA–2019–0106.

Specifically, Caltrain seeks a waiver of compliance from portions of 49 CFR 238.131(a)(1) for its new six-car Stadler Electric Multiple Unit (EMU) trainsets currently under construction. The Federal regulation incorporates American Public Transportation Association (APTA) Standard PR–M–S–18–10, *Standard for Powered Exterior Side Door System Design for New Passenger Cars,* first published February 11, 2011, by reference. Section 2.9.1 of this standard, *Design Construction,* paragraph 6 states: ''Neither shall the emergency release mechanism require the presence of any interlock signals (*e.g.* ''low speed'' or ''zero speed'' signals) for actuation. When actuated, the emergency release mechanism shall override any locks, and it shall be possible to manually open the released door with a force not to exceed 35 lbf.'' The petition states, ''for safety reasons, Caltrain would like to introduce a speed interlock to the door emergency release system.''

A copy of the petition, as well as any written communications concerning the petition, is available for review online at *www.regulations.gov* and in person at the U.S. Department of Transportation's (DOT) Docket Operations Facility, 1200 New Jersey Ave. SE, W12–140, Washington, DC 20590. The Docket Operations Facility is open from 9 a.m. to 5 p.m., Monday through Friday, except Federal Holidays.

Interested parties are invited to participate in these proceedings by submitting written views, data, or comments. FRA does not anticipate scheduling a public hearing in

connection with these proceedings since the facts do not appear to warrant a hearing. If any interested parties desire an opportunity for oral comment and a public hearing, they should notify FRA, in writing, before the end of the comment period and specify the basis for their request.

All communications concerning these proceedings should identify the appropriate docket number and may be submitted by any of the following methods:

- *Website: http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* Docket Operations Facility, U.S. Department of Transportation, 1200 New Jersey Ave. SE, W12–140, Washington, DC 20590.
- *Hand Delivery:* 1200 New Jersey Ave. SE, Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

Communications received by February 24, 2020 will be considered by FRA before final action is taken. Comments received after that date will be considered if practicable. Anyone can search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the comment (or signing the document, if submitted on behalf of an association, business, labor union, etc.). Under 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its processes. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *https://www.transportation.gov/privacy.* See also *https://www.regulations.gov/privacyNotice* for the privacy notice of *regulations.gov.*

Issued in Washington, DC.

John Karl Alexy,

Associate Administrator for Railroad Safety, Chief Safety Officer.

[FR Doc. 2020–00210 Filed 1–9–20; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF THE TREASURY

Office of the Comptroller of the Currency

Agency Information Collection Activities: Information Collection Renewal; Comment Request; Retail Foreign Exchange Transactions

AGENCY: Office of the Comptroller of the Currency (OCC), Treasury.

ACTION: Notice and request for comment.

SUMMARY: The OCC, as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal agencies to take this opportunity to comment on the renewal of an information collection as required by the Paperwork Reduction Act of 1995 (PRA).

An agency may not conduct or sponsor, and a respondent is not required to respond to, an information collection unless it displays a currently valid Office of Management and Budget (OMB) control number.

The OCC is soliciting comment concerning renewal of an information collection titled, ''Retail Foreign Exchange Transactions,'' which is currently an approved collection.

DATES: Comments must be submitted on or before March 10, 2020.

ADDRESSES: Commenters are encouraged to submit comments by email, if possible. You may submit comments by any of the following methods:

- *Email: prainfo@occ.treas.gov.*
- *Mail:* Chief Counsel's Office, Attention: Comment Processing, 1557–0250, Office of the Comptroller of the Currency, 400 7th Street SW, Suite 3E–218, Washington, DC 20219.
- *Hand Delivery/Courier:* 400 7th Street SW, Suite 3E–218, Washington, DC 20219.
- *Instructions:* You must include ''OCC'' as the agency name and ''1557–0250'' in your comment. In general, the OCC will publish comments on *www.reginfo.gov* without change, including any business or personal information provided, such as name and address information, email addresses, or phone numbers. Comments received, including attachments and other supporting materials, are part of the public record and subject to public disclosure. Do not include any information in your comment or supporting materials that you consider confidential or inappropriate for public disclosure.

You may review comments and other related materials that pertain to this information collection beginning on the date of publication of the second notice for this collection [1] by any of the following methods:

- *Viewing Comments Electronically:* Go to *www.reginfo.gov.* Click on the ''Information Collection Review'' tab. Underneath the ''Currently under Review'' section heading, from the drop-down menu select ''Department of Treasury'' and then click ''submit.'' This information collection can be located by searching by OMB control number ''1557–0250'' or ''Retail Foreign Exchange Transactions.'' Upon finding the appropriate information collection, click on the related ''ICR Reference Number.'' On the next screen, select ''View Supporting Statement and Other Documents'' and then click on the link to any comment listed at the bottom of the screen.
- For assistance in navigating *www.reginfo.gov,* please contact the Regulatory Information Service Center at (202) 482–7340.
- *Viewing Comments Personally:* You may personally inspect comments at the OCC, 400 7th Street SW, Washington, DC. For security reasons, the OCC requires that visitors make an appointment to inspect comments. You may do so by calling (202) 649–6700 or, for persons who are deaf or hearing impaired, TTY, (202) 649–5597. Upon arrival, visitors will be required to present valid government-issued photo identification and submit to security screening in order to inspect comments.

FOR FURTHER INFORMATION CONTACT: Shaquita Merritt, OCC Clearance Officer, (202) 649–5490 or, for persons who are deaf or hearing impaired, TTY, (202) 649–5597, Chief Counsel's Office, Office of the Comptroller of the Currency, 400 7th Street SW, Washington, DC 20219.

SUPPLEMENTARY INFORMATION: Under the PRA (44 U.S.C. 3501 *et seq.*), Federal agencies must obtain approval from OMB for each collection of information that they conduct or sponsor. ''Collection of information'' is defined in 44 U.S.C. 3502(3) and 5 CFR 1320.3(c) to include agency requests or requirements that members of the public submit reports, keep records, or provide information to a third party. Section 3506(c)(2)(A) of title 44 requires Federal agencies to provide a 60-day notice in the **Federal Register** concerning each proposed collection of information, including each proposed extension of an existing collection of information, before submitting the collection to OMB for approval. To comply with this

[1] Following the close of this notice's 60-day comment period, the OCC will publish a second notice with a 30-day comment period.

requirement, the OCC is publishing notice of the renewal of the collection of information set forth in this document.

Title: Retail Foreign Exchange Transactions.

OMB Control No.: 1557–0250.

Type of Review: Regular.

Frequency of Response: On occasion.

Affected Public: Businesses or other for-profit.

Estimated Number of Respondents: 15.

Total Annual Burden: 22,418 hours.

Description:

Background

The OCC's retail forex rule (12 CFR part 48) allows national banks and Federal savings associations to offer or enter into retail foreign exchange transactions. In order to engage in these transactions, institutions must comply with various reporting, disclosure, and recordkeeping requirements included in that rule.

Reporting Requirements

The reporting requirements in 12 CFR 48.4 state that, prior to initiating a retail forex business, a national bank or Federal savings association must provide the OCC with prior notice and obtain a written supervisory no-objection letter. In order to obtain a supervisory no-objection letter, a national bank or Federal savings association must have written policies, procedures, and risk measurement and management systems and controls in place to ensure that retail forex transactions are conducted in a safe and sound manner. The national bank or Federal savings association also must provide other information required by the OCC, such as documentation of customer due diligence, new product approvals, and haircuts applied to noncash margins.

Disclosure Requirements

Under 12 CFR 48.5, a national bank or Federal savings association must promptly provide the customer with a statement reflecting the financial result of the transactions and the name of any introducing broker to the account. The institution must follow the customer's specific instructions on how the offsetting transaction should be applied.

Twelve CFR 48.6 requires that a national bank or Federal savings association furnish a retail forex customer with a written disclosure before opening an account through which the customer will engage in retail forex transactions. It further requires a national bank or Federal savings association to secure an acknowledgment from the customer that the disclosure was received and understood. Finally, the section requires the disclosure by a national bank or Federal savings association of its profitable accounts ratio and its fees and other charges.

Twelve CFR 48.10 requires a national bank or Federal savings association to issue monthly statements to each retail forex customer and send confirmation statements following transactions.

Twelve CFR 48.13(c) prohibits a national bank or Federal savings association engaging in retail forex transactions from knowingly handling the account of any related person of another retail forex counterparty unless it receives proper written authorization, promptly prepares a written record of the order, and transmits to the counterparty copies of all statements and written records. Twelve CFR 48.13(d) prohibits a related person of a national bank or Federal savings association engaging in retail forex transactions from having an account with another retail forex counterparty unless it receives proper written authorization and copies of all statements and written records for such accounts are transmitted to the counterparty.

Twelve CFR 48.15 requires a national bank or Federal savings association to provide a retail forex customer with 30 days prior notice of any assignment of any position or transfer of any account of the retail forex customer. It also requires a national bank or Federal savings association to which retail forex accounts or positions are assigned or transferred to provide the affected customers with risk disclosure statements and forms of acknowledgment and obtain the signed acknowledgments within 60 days.

The customer dispute resolution provisions in 12 CFR 48.16 require certain endorsements, acknowledgments, and signatures. The section also requires that a national bank or Federal savings association, within 10 days after receipt of notice from the retail forex customer that the customer intends to submit a claim to arbitration, provide the customer with a list of persons qualified in the dispute resolution.

Policies and Procedures; Recordkeeping

Twelve CFR 48.7 and 48.13 require that a national bank or Federal savings association engaging in retail forex transactions keep full, complete, and systematic records and to establish and implement internal rules, procedures, and controls. Section 48.7 also requires that a national bank or Federal savings association keep account, financial ledger, transaction, and daily records, as well as memorandum orders, post-execution allocation of bunched orders, records regarding its ratio of profitable accounts, possible violations of law, records for noncash margin, and monthly statements and confirmations. Twelve CFR 48.9 requires policies and procedures for haircuts for noncash margin collected under the rule's margin requirements and annual evaluations and modifications of the haircuts.

Comments submitted in response to this notice will be summarized and included in the request for OMB approval. All comments will become a matter of public record. Comments are invited on:

(a) Whether the collection of information is necessary for the proper performance of the functions of the OCC, including whether the information has practical utility;

(b) The accuracy of the OCC's estimate of the burden of the information collection;

(c) Ways to enhance the quality, utility, and clarity of the information to be collected;

(d) Ways to minimize the burden of the collection on respondents, including through the use of automated collection techniques or other forms of information technology; and

(e) Estimates of capital or start-up costs and costs of operation, maintenance, and purchase of services to provide information.

Dated: January 6, 2020.

Theodore J. Dowd,

Deputy Chief Counsel, Office of the Comptroller of the Currency.

[FR Doc. 2020–00232 Filed 1–9–20; 8:45 am]

BILLING CODE 4810–33–P

DEPARTMENT OF THE TREASURY

Multiemployer Pension Plan Application To Reduce Benefits

AGENCY: Department of the Treasury.

ACTION: Notice of availability; request for comments.

SUMMARY: The Board of Trustees of the Bricklayers & Allied Craftsmen Local 7 Pension Fund (Fund), a multiemployer pension plan, has submitted an application to reduce benefits under the plan in accordance with the Multiemployer Pension Reform Act of 2014 (MPRA). The purpose of this notice is to announce that the application submitted by the Board of Trustees of the Fund has been published

on the website of the Department of the Treasury (Treasury), and to request public comments on the application from interested parties, including participants and beneficiaries, employee organizations, and contributing employers of the Fund.

DATES: Comments must be received by February 24, 2020.

ADDRESSES: You may submit comments electronically through the Federal eRulemaking Portal at *http://www.regulations.gov,* in accordance with the instructions on that site. Electronic submissions through *www.regulations.gov* are encouraged.

Comments may also be mailed to the Department of the Treasury, MPRA Office, 1500 Pennsylvania Avenue NW, Room 1224, Washington, DC 20220, Attn: Danielle Norris. Comments sent via facsimile or email will not be accepted.

Additional Instructions. All comments received, including attachments and other supporting materials, will be made available to the public. Do not include any personally identifiable information (such as your Social Security number, name, address, or other contact information) or any other information in your comment or supporting materials that you do not want publicly disclosed. Treasury will make comments available for public inspection and copying on *www.regulations.gov* or upon request. Comments posted on the internet can be retrieved by most internet search engines.

FOR FURTHER INFORMATION CONTACT: For information regarding the application from the Fund, please contact Treasury at (202) 622–1534 (not a toll-free number).

SUPPLEMENTARY INFORMATION: MPRA amended the Internal Revenue Code to permit a multiemployer plan that is projected to have insufficient funds to reduce pension benefits payable to participants and beneficiaries if certain conditions are satisfied. In order to reduce benefits, the plan sponsor is required to submit an application to the Secretary of the Treasury, which must be approved or denied in consultation with the Pension Benefit Guaranty Corporation (PBGC) and the Department of Labor.

On December 13, 2019, the Board of Trustees of the Fund submitted an application for approval to reduce benefits under the plan. As required by MPRA, that application has been published on Treasury's website at *https://www.treasury.gov/services/Pages/Plan-Applications.aspx.* Treasury is publishing this notice in the **Federal Register**, in consultation with PBGC and the Department of Labor, to solicit public comments on all aspects of the Fund's application.

Comments are requested from interested parties, including participants and beneficiaries, employee organizations, and contributing employers of the Fund. Consideration will be given to any comments that are timely received by Treasury.

Dated: January 3, 2020.

David Kautter,

Assistant Secretary for Tax Policy.

[FR Doc. 2020–00190 Filed 1–9–20; 8:45 am]

BILLING CODE 4810–25–P

DEPARTMENT OF THE TREASURY

Interest Rate Paid on Cash Deposited To Secure U.S. Immigration and Customs Enforcement Immigration Bonds

AGENCY: Departmental Offices, Treasury.

ACTION: Notice.

SUMMARY: For the period beginning January 1, 2020, and ending on March 31, 2020, the U.S. Immigration and Customs Enforcement Immigration Bond interest rate is 1.61 per centum per annum.

DATES: Rates are applicable January 1, 2020 to March 31, 2020.

ADDRESSES: Comments or inquiries may be mailed to Will Walcutt, Supervisor, Funds Management Branch, Funds Management Division, Fiscal Accounting, Bureau of the Fiscal Services, Parkersburg, West Virginia 26106–1328.

You can download this notice at the following internet addresses: *http://www.treasury.gov* or *http://www.federalregister.gov.*

FOR FURTHER INFORMATION CONTACT: Ryan Hanna, Manager, Funds Management Branch, Funds Management Division, Fiscal Accounting, Bureau of the Fiscal Service, Parkersburg, West Virginia 261006–1328, (304) 480–5120; Will Walcutt, Supervisor, Funds Management Branch, Funds Management Division, Fiscal Accounting, Bureau of the Fiscal Services, Parkersburg, West Virginia 26106–1328, (304) 480–5117.

SUPPLEMENTARY INFORMATION: Federal law requires that interest payments on cash deposited to secure immigration bonds shall be ''at a rate determined by the Secretary of the Treasury, except that in no case shall the interest rate exceed 3 per centum per annum.'' 8 U.S.C. 1363(a). Related Federal regulations state that ''Interest on cash deposited to secure immigration bonds will be at the rate as determined by the Secretary of the Treasury, but in no case will exceed 3 per centum per annum or be less than zero.'' 8 CFR 293.2. Treasury has determined that interest on the bonds will vary quarterly and will accrue during each calendar quarter at a rate equal to the lesser of the average of the bond equivalent rates on 91-day Treasury bills auctioned during the preceding calendar quarter, or 3 per centum per annum, but in no case less than zero. [FR Doc. 2015–18545] In addition to this Notice, Treasury posts the current quarterly rate in Table 2b—Interest Rates for Specific Legislation on the TreasuryDirect website.

Gary Grippo,

Deputy Assistant Secretary for Public Finance.

[FR Doc. 2020–00189 Filed 1–9–20; 8:45 am]

BILLING CODE 4810–25–P

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Notice of Open Public Hearing

AGENCY: U.S.-China Economic and Security Review Commission.

ACTION: Notice of open public hearing.

SUMMARY: Notice is hereby given of the following hearing of the U.S.-China Economic and Security Review Commission.

The Commission is mandated by Congress to investigate, assess, and report to Congress annually on ''the national security implications of the economic relationship between the United States and the People's Republic of China.'' Pursuant to this mandate, the Commission will hold a public hearing in Washington, DC on January 23, 2020 on ''China's Quest for Capital: Motivations, Methods, and Implications.''

DATES: The hearing is scheduled for Thursday, January 23, 2020 at 9:30 a.m.

ADDRESSES: TBD, Washington, DC. A detailed agenda for the hearing will be posted on the Commission's website at *www.uscc.gov.* Also, please check the Commission's website for possible changes to the hearing schedule. *Reservations are not required to attend the hearing.*

FOR FURTHER INFORMATION CONTACT: Any member of the public seeking further information concerning the hearing should contact Leslie Tisdale Reagan, 444 North Capitol Street NW, Suite 602, Washington, DC 20001; telephone: 202–

624–1496, or via email at *lreagan@uscc.gov*. *Reservations are not required to attend the hearing*.

ADA Accessibility: For questions about the accessibility of the event or to request an accommodation, please contact Leslie Tisdale Reagan at 202–624–1496, or via email at *lreagan@uscc.gov*. Requests for an accommodation should be made as soon as possible, and at least five business days prior to the event.

SUPPLEMENTARY INFORMATION:

Background: This is the first public hearing the Commission will hold during its 2020 report cycle. The hearing will examine the internal dynamics of China's financial system; China's increasingly rapid integration into global financial markets; and the risks this poses to U.S. investors and savers. Specifically, Panel 1 will assess China's overall capital requirements and systemic challenges. Panel 2 will identify and evaluate the tools used by various actors in the Chinese economy to raise capital. Panel 3 will assess the exposure of U.S. investors and savers to the growing integration of Chinese securities into U.S. and global capital markets. The hearing will be co-chaired by Chairman Robin Cleveland and Commissioner Michael Wessel. Any interested party may file a written statement by January 23, 2020 by mailing to the contact above. A portion of each panel will include a question and answer period between the Commissioners and the witnesses.

Authority: Congress created the U.S.-China Economic and Security Review Commission in 2000 in the National Defense Authorization Act (Pub. L. 106–398), as amended by Division P of the Consolidated Appropriations Resolution, 2003 (Pub. L. 108–7), as amended by Public Law 109–108 (November 22, 2005), as amended by Public Law 113–291 (December 19, 2014).

Dated: January 6, 2020.

Daniel W. Peck,

Executive Director, U.S.-China Economic and Security Review Commission.

[FR Doc. 2020–00237 Filed 1–9–20; 8:45 am]

BILLING CODE 1137–00–P

FEDERAL REGISTER

Vol. 85 Friday,

No. 7 January 10, 2020

Part II

Department of Energy

10 CFR 429, 430, and 431

Energy Conservation Program: Energy Conservation Standards; Energy Conservation Standards for Portable Air Conditioners; Energy Conservation Standards for Uninterruptible Power Supplies; Energy Conservation Standards for Air Compressors; Energy Conservation Standards for Commercial Packaged Boilers; Final Rules

DEPARTMENT OF ENERGY

10 CFR Parts 429, 430, and 431

[EERE–2013–BT–STD–0030, EERE–2013–BT–STD–0033, EERE–2013–BT–STD–0040 and EERE–2016–BT–STD–0022]

RINs 1904–AD01, 1904–AD02, 1904–AC83 and 1904–AD69

Energy Conservation Program: Energy Conservation Standards

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final action; implementation of court order.

SUMMARY: Pursuant to an order from the U.S. District Court for the Northern District of California in the consolidated cases of *Natural Resources Defense Council, et al.* v. *Perry* and *People of the State of California et al.* v. *Perry,* Case No. 17–cv–03404–VC, as affirmed by the U.S. Court of Appeals for the Ninth Circuit in the consolidated cases Nos. 18–15380 and 18–15475, the Department of Energy (''DOE'') is publishing elsewhere in this issue of the **Federal Register** four final rule documents that either establish or amend the energy conservation standards for commercial packaged boilers, portable air conditioners, industrial air compressors, and uninterruptible power supplies.

DATES: January 10, 2020.

ADDRESSES: The docket, which includes **Federal Register** notices, comments, and other supporting documents/materials, is available for review at *http://www.regulations.gov.* All documents in the docket are listed in the *http://www.regulations.gov* index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

Docket: The docket web pages for each of the documents referenced in the summary above are listed in each individual document establishing or amending an energy conservation standard. The docket web page contains simple instructions on how to access all documents, including public comments, in the docket.

FOR FURTHER INFORMATION CONTACT: For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 586–6636 or by email: *Appliance StandardsQuestions@ee.doe.gov.*

SUPPLEMENTARY INFORMATION: Elsewhere in this issue of the **Federal Register**, DOE is publishing four separate documents (''ECS documents'') that establish or amend the energy conservation standards for commercial packaged boilers, portable air conditioners, industrial air compressors, and uninterruptible power supplies. These four documents are being published to comply with an order from the U.S. District Court for the Northern District of California in the consolidated cases of *Natural Resources Defense Council, et al.* v. *Perry* and *People of the State of California et al.* v. *Perry,* Case No. 17–cv–03404–VC. This order was affirmed by the Ninth Circuit in a subsequent appeal, Case Nos. 18–15380 and 18–15475, and, accordingly, DOE is publishing these documents pursuant to the District Court's order.

Pursuant to this order, DOE submitted the documents, as originally signed and dated in 2016. By publishing this final action, DOE reaffirms the validity of the original signatures on the ECS documents under 1 CFR 18.1 and 18.7.

Each of the ECS documents is substantively identical to the documents previously posted to DOE's website. However, consistent with the normal publication process, each document has been reviewed and edited to ensure that the requirements set out by the Administrative Committee of the **Federal Register** (1 CFR chapter I) and the Office of the Federal Register (Document Drafting Handbook, *www.archives.gov/federal-register/write/handbook/ddh/pdf*) regarding formatting and organizational structure have been satisfied.

Signed in Washington, DC, on December 2, 2019.

Daniel Simmons,

Assistant Secretary for Energy Efficiency and Renewable Energy.

[FR Doc. 2019–26345 Filed 1–9–20; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[Docket Number EERE–2013–BT–STD–0033]

RIN 1904–AD02

Energy Conservation Program: Energy Conservation Standards for Portable Air Conditioners

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: The Energy Policy and Conservation Act of 1975 (EPCA or the Act), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment. In addition to specifying a list of covered consumer products and commercial equipment, EPCA contains provisions that enable the Secretary of Energy to classify additional types of consumer products as covered products. On April 18, 2016, the U.S. Department of Energy (DOE or the Department) published a final coverage determination to classify portable air conditioners (ACs) as covered consumer products under the applicable provisions in EPCA. In this final rule, DOE establishes new energy conservation standards for portable ACs. DOE has determined that the energy conservation standards for these products would result in significant conservation of energy, and are technologically feasible and economically justified.

DATES: The effective date of this rule is March 10, 2020. Compliance with the standards established for portable ACs in this final rule is required on and after January 10, 2025.

ADDRESSES: The docket for this rulemaking, which includes **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at *https://www.regulations.gov/docket?D=EERE-2013-BT-STD-0033.* The docket web page contains simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 586–6636 or by email: *ApplianceStandardsQuestions@ee.doe.gov.*

FOR FURTHER INFORMATION CONTACT:

Mr. Bryan Berringer, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–0371. Email: *Bryan.Berringer@ee.doe.gov.*

Ms. Sarah Butler, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121.

Telephone: (202) 586–1777. Email: *Sarah.Butler@hq.doe.gov.*

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I. Synopsis of the Final Rule

Title III, Part B [1] of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Public Law 94–163 (42 U.S.C. 6291–6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles.[2] In addition to specifying a list of covered residential products and commercial equipment, EPCA contains provisions that enable the Secretary of Energy to classify additional types of consumer products as covered products. (42 U.S.C. 6292(a)(20)) In a final determination of coverage published in the **Federal Register** on April 18, 2016 (the ''April 2016 Final Coverage Determination''), DOE classified portable ACs as covered consumer products under EPCA. 81 FR 22514.

Pursuant to EPCA, any new or amended energy conservation standard must be designed to achieve the maximum improvement in energy efficiency that DOE determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) Furthermore, the new or amended standard must result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

In accordance with these and other statutory provisions discussed in this document, DOE is adopting energy conservation standards for portable ACs. The standards, which correspond to trial standard level (TSL) 2 (described in section V.A of this document), are minimum allowable combined energy efficiency ratio (CEER) standards, which are expressed in British thermal units (Btu) per watt-hour (Wh), and are shown in Table I.1. These standards apply to all single-duct portable ACs and dual-duct portable ACs that are manufactured in, or imported into, the United States starting on January 10, 2025.

[1] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

[2] All references to EPCA in this document refer to the statute as amended through the Energy Efficiency Improvement Act of 2015, Public Law 114–11 (Apr. 30, 2015).

Table I.1 Energy Conservation Standards for Portable Air Conditioners (Compliance Starting January 10, 2025)

Portable Air Conditioner Product Class	Minimum CEER (Btu/Wh)
Single-duct and dual-duct portable air conditioners	$1.04 \times \frac{SACC}{(3.7117 \times SACC^{0.6384})}$

Note: SACC is the representative value of Seasonally Adjusted Cooling Capacity, in Btu/h, as determined in accordance with the DOE test procedure at title 10 Code of Federal Regulations (CFR) 430, subpart B, appendix CC and applicable sampling plans.

A. Benefits and Costs to Consumers

Table I.2 summarizes DOE's evaluation of the economic impacts of the adopted standards on consumers of portable ACs, as measured by the average life-cycle cost (LCC) savings and the simple payback period (PBP).[3] The average LCC savings are positive and the PBP is less than the average lifetime of portable ACs, which is estimated to be approximately 10 years (see section IV.F.6 of this document).

TABLE I.2—IMPACTS OF NEW ENERGY CONSERVATION STANDARDS ON CONSUMERS OF PORTABLE AIR CONDITIONERS

Product class	Average LCC savings (2015$)	Simple payback period (years)
Single-duct and dual-duct portable air conditioners	125	2.6

DOE's analysis of the impacts of the adopted standards on consumers is described in section IV.F of this document. DOE also performed three sensitivity analyses on its primary assertion that portable air conditioners are used and operated in a similar manner to room air conditioners to further analyze the effects of the benefits and cost to consumers from these products. In one sensitivity analysis, DOE found that reducing operating hours by 50 percent, resulted in an estimate of one-third of the energy cost savings relative to the primary estimate. In this low-usage case, the average LCC savings for all consumers under the adopted standards would be $35 (compared with $125 in the primary estimate), and 42 percent of consumers would be impacted negatively (compared with 27 percent in the primary estimate). The simple payback period would be 5.1 years (compared with 2.6 years in the primary estimate). Further details are presented in section IV.E, V.B.1, and appendix 8F and appendix 10E of the final rule TSD.

B. Impact on Manufacturers

The industry net present value (INPV) is the sum of the discounted cash flows to the industry from the base year through the end of the analysis period (2017–2051). Using a real discount rate of 6.6 percent, DOE estimates that the INPV for manufacturers of portable ACs in the case without new standards is $738.5 million in 2015$. Under the adopted standards, DOE expects the change in INPV to range from −34.3 percent to −28.8 percent, which is approximately −$253.4 million to −$212.4 million. In order to bring products into compliance with new standards, DOE expects the industry to incur total conversion costs of $320.9 million.

DOE's analysis of the impacts of the adopted standards on manufacturers is described in section IV.J and section V.B.2 of this document.

C. National Benefits and Costs[4]

DOE's analyses indicate that the adopted energy conservation standards for portable ACs would save a significant amount of energy. Relative to the case without new standards the lifetime energy savings for portable ACs purchased in the 30-year period that begins in the anticipated year of compliance with the new standards (2022–2051), amount to 0.49 quadrillion Btu, or quads.[5] This represents a savings of 6.4 percent relative to the energy use of these products in the case without new standards (referred to as the ''no-new-standards case'').

The cumulative net present value (NPV) of total consumer benefits of the standards for portable ACs ranges from $1.25 billion (at a 7-percent discount rate) to $3.06 billion (at a 3-percent discount rate). This NPV expresses the estimated total value of future operating-cost savings minus the estimated increased product costs for portable ACs purchased in 2022–2051.

[3] The average LCC savings refer to consumers that are affected by a standard and are measured relative to the efficiency distribution in the no-new-standards case, which depicts the market in the compliance year in the absence of standards (see section IV.F of this document). The simple PBP, which is designed to compare specific ELs, is measured relative to the baseline product (see section IV.C of this document).

[4] All monetary values in this document are expressed in 2015 dollars and, where appropriate, are discounted to 2015 unless explicitly stated otherwise.

[5] The quantity refers to full-fuel-cycle (FFC) energy savings. FFC energy savings includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and, thus, presents a more complete picture of the impacts of energy efficiency standards. For more information on the FFC metric, see section IV.H.1 of this document.

In addition, the new standards for portable ACs are projected to yield significant environmental benefits. DOE estimates that the standards will result in cumulative emission reductions (over the same period as for energy savings) of 25.6 million metric tons (Mt) [6] of carbon dioxide (CO_2), 16.4 thousand tons of sulfur dioxide (SO_2), 32.2 tons of nitrogen oxides (NO_X), 124.8 thousand tons of methane (CH_4), 0.4 thousand tons of nitrous oxide (N_2O), and 0.06 tons of mercury (Hg).[7] The estimated reduction in CO_2 emissions through 2030 amounts to 4.0 Mt, which is equivalent to the emissions resulting from the annual electricity use of more than 0.42 million homes.

The value of the CO_2 reductions is calculated using a range of values per metric ton (t) of CO_2 (otherwise known as the ''social cost of carbon'', or SC-CO_2) developed by a Federal interagency working group.[8] The derivation of the SC-CO_2 values is discussed in section IV.L.1 of this document. Using discount rates appropriate for each set of SC-CO_2 values, DOE estimates the present value of the CO_2 emissions reduction is between $0.2 billion and $2.5 billion, with a value of 0.8 billion using the central SC-CO_2 case represented by $40.6/metric ton (t) in 2015.

DOE also calculated the value of the reduction in emissions of the non-CO_2 greenhouse gases (GHGs), CH_4 and N_2O, using values for the social cost of methane (SC-CH_4) and the social cost of nitrous oxide (SC-N_2O) recently developed by the interagency working group.[9] See section IV.L.2 for description of the methodology and the values used for DOE's analysis. The estimated present value of the CH_4 emissions reduction is between $0.04 billion and $0.3 billion, with a value of $0.1 billion using the central SC-CH_4 case, and the estimated present value of the N_2O emissions reduction is between $0.001 billion and $0.011 billion, with a value of $0.004 billion using the central SC-N_2O case.

DOE also estimates that the present value of the NO_X emissions reduction to be $0.02 billion using a 7-percent discount rate, and $0.06 billion using a 3-percent discount rate.[10] DOE is still investigating appropriate valuation of the reduction in other emissions, and therefore did not include any such values in the analysis for this final rule.

Table I.3 summarizes the economic benefits and costs expected to result from the adopted standards for portable ACs.

TABLE I.3—SELECTED CATEGORIES OF ECONOMIC BENEFITS AND COSTS OF NEW ENERGY CONSERVATION STANDARDS FOR PORTABLE AIR CONDITIONERS *

[TSL 2]

Category	Present value (billion 2015$)	Discount rate percent
Benefits		
Consumer Operating Cost Savings	1.8	7
	4.1	3
GHG Reduction (using avg. social costs at 5% discount rate) **.	0.2	5
GHG Reduction (using avg. social costs at 3% discount rate) **.	1.0	3
GHG Reduction (using avg. social costs at 2.5% discount rate) **.	1.5	2.5
GHG Reduction (using 95th percentile social costs at 3% discount rate) **.	2.9	3
NO_X Reduction †	0.02	7
	0.06	3
Total Benefits ‡	2.8	7
	5.1	3
Costs		
Consumer Incremental Installed Costs	0.5	7
	1.0	3
Total Net Benefits		
Including GHG and NO_X Reduction Monetized Value ‡	7	

[6] A metric ton is equivalent to 1.1 short tons. Results for emissions other than CO_2 are presented in short tons.

[7] DOE calculated emissions reductions relative to the no-standards-case, which reflects key assumptions in the *Annual Energy Outlook 2016* (*AEO 2016*). *AEO 2016* represents current legislation and environmental regulations for which implementing regulations were available as of the end of February 2016.

[8] U.S. Government—Interagency Working Group on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* May 2013. Revised July 2015. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

[9] U.S. Government—Interagency Working Group on Social Cost of Greenhouse Gases. Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide. August 2016. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf.*

[10] DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by Environmental Protection Agency's (EPA's) Office of Air Quality Planning and Standards. Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See section IV.L of this document for further discussion. The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. *Chamber of Commerce, et al.* v. *EPA, et al.*, Order in Pending Case, 577 U.S. (2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan. DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the Electricity Generating Unit sector based on an estimate of premature mortality derived from the American Cancer Society (ACS) study (Krewski *et al.* 2009). If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

TABLE I.3—SELECTED CATEGORIES OF ECONOMIC BENEFITS AND COSTS OF NEW ENERGY CONSERVATION STANDARDS FOR PORTABLE AIR CONDITIONERS *—Continued

[TSL 2]

Category	Present value (billion 2015$)	Discount rate percent
	4.1	3

* This table presents the costs and benefits associated with portable ACs shipped in 2022–2051. These results include benefits to consumers which accrue after 2051 from the products shipped in 2022–2051. The incremental installed costs include incremental equipment cost as well as installation costs. The costs account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule. The GHG reduction benefits are global benefits due to actions that occur domestically.

** The interagency group selected four sets of SC-CO_2, SC-CH_4, and SC-N_2O values for use in regulatory analyses. Three sets of values are based on the average social costs from the integrated assessment models, at discount rates of 5 percent, 3 percent, and 2.5 percent. The fourth set, which represents the 95th percentile of the SC-CO_2 distribution calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the social cost distributions. The social cost values are emission year specific. See section IV.L.1 of this document for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L of this document for further discussion. DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the electricity generating sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average social costs with 3-percent discount rate.

The benefits and costs of the adopted standards, for portable ACs sold in 2022–2051, can also be expressed in terms of annualized values. The monetary values for the total annualized net benefits are (1) the reduced consumer operating costs, minus (2) the increases in product purchase prices and installation costs, plus (3) the value of the benefits of CO_2 and NO_X emission reductions, all annualized.[11]

The national operating cost savings are domestic private U.S. consumer monetary savings that occur as a result of purchasing the covered products and are measured for the lifetime of portable ACs shipped in 2022–2051. The benefits associated with reduced CO_2 emissions achieved as a result of the adopted standards are also calculated based on the lifetime of portable ACs shipped in 2022–2051. Because CO_2 emissions have a very long residence time in the atmosphere, the SC-CO_2 values for CO_2 emissions in future years reflect impacts that continue through 2300. The CO_2 reduction is a benefit that accrues globally.

Estimates of annualized benefits and costs of the adopted standards are shown in Table I.4. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than GHG reduction (for which DOE used average social costs with a 3-percent discount rate,[12] the estimated cost of the standards in this rule is $61 million per year in increased equipment costs, while the estimated annual benefits are $202.7 million in reduced equipment operating costs, $56.7 million in GHG reductions, and $2.6 million in reduced NO_X emissions. In this case, the net benefit amounts to $201 million per year. Using a 3-percent discount rate for all benefits and costs, the estimated cost of the standards is $59 million per year in increased equipment costs, while the estimated annual benefits are $240.0 million in reduced operating costs, $56.7 million in GHG reductions, and $3.3 million in reduced NO_X emissions. In this case, the net benefit amounts to $241 million per year.

TABLE I.4—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF NEW STANDARDS (TSL 2) FOR PORTABLE ACS *

	Discount rate (percent)	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings	7	202.7	99.1	214.4.
	3	240.0	116.3	256.1.
CO_2 Reduction (using avg. social costs at 5% discount rate) **	5	18.4	8.8	19.9.
CO_2 Reduction (using avg. social costs at 3% discount rate) **	3	56.7	27.0	61.4.
CO_2 Reduction (using avg. social costs at 2.5% discount rate) **	2.5	81.1	38.6	87.9.
CO_2 Reduction (using 95th percentile SC-CO_2 at 3% discount rate) **.	3	169.9	80.9	184.1.
NO_X Reduction †	7	2.6	1.2	6.2.
	3	3.3	1.6	8.1.
Total Benefits ‡	7 plus CO_2 range	224 to 375	213 to 354	240 to 405.

[11] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2016, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (*e.g.,* 2020 or 2030), and then discounted the present value from each year to 2016. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates, as shown in Table I.3. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year, that yields the same present value.

[12] DOE used average social costs with a 3-percent discount rate. These values are considered as the ''central'' estimates by the interagency group.

TABLE I.4—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF NEW STANDARDS (TSL 2) FOR PORTABLE ACS *—Continued

	Discount rate (percent)	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
	7	262	249	282.
	3 plus CO_2 range	262 to 413	248 to 389	284 to 448.
	3	300	283	326.
Costs				
Consumer Incremental Product Costs	7	61.0	60.8	55.6.
	3	59.0	58.9	53.3.
Net Benefits				
Total ‡	7 plus CO_2 range	163 to 314	48 to 120	185 to 349.
	7	201	67	226.
	3 plus CO_2 range	203 to 354	68 to 140	231 to 395.
	3	241	86	272.

* This table presents the annualized costs and benefits associated with portable ACs shipped in 2022–2051. These results include benefits to consumers which accrue after 2051 from the portable ACs purchased from 2022–2051. The incremental installed costs include incremental equipment cost as well as installation costs. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy price trends from the *AEO 2016* No-CPP case, a Low Economic Growth case, and a High Economic Growth case, respectively. In addition, incremental product costs reflect a medium decline rate in the Primary Estimate, a low decline rate in the Low Benefits Estimate, and a high decline rate in the High Benefits Estimate. The Low Benefits Estimate reflects a 50-percent reduction in the operating hours relative to the reference case operating hours. The methods used to derive projected price trends are explained in section IV.F of this document. The benefits and costs are based on equipment efficiency distributions as described in sections IV.F.8 and IV.H.1. Purchases of higher efficiency equipment are a result of many different factors unique to each consumer including past purchases, expected usage, and others. For each consumer, all other factors being the same, it would be anticipated that higher efficiency purchases in the no-new-standards case may correlate positively with higher energy prices. To the extent that this occurs, it would be expected to result in some lowering of the consumer operating cost savings from those calculated in this rule. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

** The interagency group selected four sets of SC-CO_2, SC-CH_4, and SC-N_2O values for use in regulatory analyses. Three sets of values are based on the average social costs from the integrated assessment models, at discount rates of 5 percent, 3 percent, and 2.5 percent. The fourth set, which represents the 95th percentile of the social cost distributions calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the social cost distributions The SC-CO_2 values are emission year specific. See section IV.L.1 of this document for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the ACS study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average social costs with 3-percent discount rate. In the rows labeled "7% plus GHG range" and "3% plus GHG range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of social cost values.

DOE's analysis of the national impacts of the adopted standards is described in sections IV.H, IV.K, and IV.L of this document.

D. Conclusion

Based on the analyses culminating in this final rule, DOE found the benefits to the nation of the standards (energy savings, consumer LCC savings, positive NPV of consumer benefit, and emission reductions) outweigh the burdens (loss of INPV and LCC increases for some users of these products). DOE has concluded that the standards in this final rule represent the maximum improvement in energy efficiency that is technologically feasible and economically justified, and would result in significant conservation of energy.

II. Introduction

The following section briefly discusses the statutory authority underlying this final rule, as well as some of the relevant historical background related to the establishment of standards for portable ACs.

A. Authority

Title III, Part B of the EPCA, Public Law 94–163 (codified as 42 U.S.C. 6291–6309) established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances (collectively referred to as ''covered products''). EPCA authorizes the Secretary of Energy to classify additional types of consumer products not otherwise specified in Part A as covered products. For a type of consumer product to be classified as a covered product, the Secretary must determine that:

(1) Classifying the product as a covered product is necessary for the purposes of EPCA; and

(2) The average annual per-household energy use by products of such type is likely to exceed 100 kilowatt-hours (kWh) per year. (42 U.S.C. 6292(b)(1))

Under the authority established in EPCA, DOE published the April 2016 Final Coverage Determination that established portable ACs as a covered product because such a classification is necessary or appropriate to carry out the purposes of EPCA, and the average U.S. household energy use for portable ACs is likely to exceed 100 kWh per year. 81 FR 22514 (Apr. 18, 2016).

EPCA, as amended, grants DOE authority to prescribe an energy

conservation standard for any type (or class) of covered products of a type specified in 42 U.S.C. 6292(a)(19) [13] if the requirements of 42 U.S.C. 6295(o) and (p) are met and the Secretary determines that—

(1) the average per household energy use within the United States by products of such type (or class) exceeded 150 kilowatt-hours (kWh) (or its Btu equivalent) for any 12-month period ending before such determination;

(2) the aggregate household energy use within the United States by products of such type (of class) exceeded 4,200,000,000 kWh (or its Btu equivalent) for any such 12-month period;

(3) substantial improvement in the energy efficiency of products of such type (or class) is technologically feasible; and

(4) the application of a labeling rule under 42 U.S.C. 6294 to such type (or class) is not likely to be sufficient to induce manufacturers to produce, and consumers and other persons to purchase, covered products of such type (or class) which achieve the maximum energy efficiency which is technologically feasible and economically justified. (42 U.S.C. 6295(l)(1))

DOE has determined that portable ACs meet the four criteria outlined in 42 U.S.C. 6295(l)(1) for prescribing energy conservation standards for newly covered products. Specifically, DOE has determined that for a 12-month period ending before such determination, the average per household energy use within the U.S. by portable ACs exceeded 150 kWh (see chapter 7 of this final rule technical support document (TSD)). DOE has also determined that the aggregate household energy use within the United States by portable ACs exceeded 4,200,000,000 kWh (or its Btu equivalent) for such a 12-month period (see chapter 10 of this final rule TSD). Further, DOE has determined that substantial improvement in the energy efficiency of portable ACs is technologically feasible (see section IV.C of this document and chapter 5 of the final rule TSD), and has determined that the application of a labeling rule under 42 U.S.C. 6294 to portable ACs is not likely to be sufficient to induce manufacturers to produce, and consumers and other persons to purchase, portable ACs that achieve the maximum energy efficiency which is technologically feasible and economically justified (see chapter 17 of this final rule TSD).

Pursuant to EPCA, DOE's energy conservation program for covered products consists essentially of four parts: (1) Testing, (2) labeling, (3) the establishment of Federal energy conservation standards, and (4) certification and enforcement procedures. The Federal Trade Commission (FTC) is primarily responsible for labeling, and DOE implements the remainder of the program. Subject to certain criteria and conditions, DOE is required to develop test procedures to measure the energy efficiency, energy use, or estimated annual operating cost of each covered product. (42 U.S.C. 6295(o)(3)(A) and (r)) Manufacturers of covered products must use the prescribed DOE test procedure as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA and when making representations to the public regarding the energy use or efficiency of those products. (42 U.S.C. 6293(c)) Similarly, DOE must use these test procedures to determine whether the products comply with standards adopted pursuant to EPCA. (42 U.S.C. 6295(s)) The DOE test procedures for portable ACs were established in a final rule published on June 1, 2016 (81 FR 35241; hereinafter the ''June 2016 TP Final Rule''), and appear at title 10 of the Code of Federal Regulations (CFR) part 430, subpart B, appendix CC (hereinafter ''appendix CC'') and 10 CFR 430.23(dd).

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products, including portable ACs. Any new or amended standard for a covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary of Energy determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A) and (3)(B)) Furthermore, DOE may not adopt any standard that would not result in the significant conservation of energy. (42 U.S.C. 6295(o)(3)(B)) Moreover, DOE may not prescribe a standard (1) for certain products, including portable ACs, if no test procedure has been established for the product, or (2) if DOE determines by rule that the standard is not technologically feasible or economically justified. (42 U.S.C. 6295(o)(3)(A)–(B)) In deciding whether a proposed standard is economically justified, DOE must determine whether the benefits of the standard exceed its burdens. (42 U.S.C. 6295(o)(2)(B)(i)) DOE must make this determination after receiving comments on the proposed standard, and by considering, to the greatest extent practicable, the following seven statutory factors:

(1) The economic impact of the standard on manufacturers and consumers of the products subject to the standard;

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial charges, or maintenance expenses for the covered products that are likely to result from the standard;

(3) The total projected amount of energy (or as applicable, water) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the covered products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy (Secretary) considers relevant. (42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII))

Further, EPCA, as codified, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii))

EPCA, as codified, states that the Secretary may not prescribe an amended or new standard if interested persons have established by a preponderance of the evidence that the standard is likely to result in the unavailability in the U.S. in any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the U.S. (42 U.S.C. 6295(o)(4))

Additionally, EPCA specifies requirements when promulgating an energy conservation standard for a covered product that has two or more subcategories. DOE must specify a different standard level for a type or class of products that has the same function or intended use if DOE

[13] In amending EPCA, Congress added metal halide lamp fixtures as a covered product at 42 U.S.C. 6292(a)(19) and redesignated the existing listing for (19) (*i.e.,* any other type of consumer product which the Secretary classifies as a covered product under subsection (b) of this section) as (20). However, the corresponding reference in 42 U.S.C. 6295(l)(1) was not updated. DOE has determined this to be a drafting error and is giving the provision its intended effect as if such error had not occurred.

determines that products within such group (A) consume a different kind of energy from that consumed by other covered products within such type (or class); or (B) have a capacity or other performance-related feature which other products within such type (or class) do not have and such feature justifies a higher or lower standard. (42 U.S.C. 6295(q)(1)) In determining whether a performance-related feature justifies a different standard for a group of products, DOE must consider such factors as the utility to the consumer of such a feature and other factors DOE deems appropriate. *Id.* Any rule prescribing such a standard must include an explanation of the basis on which such higher or lower level was established. (42 U.S.C. 6295(q)(2))

Federal energy conservation requirements generally supersede State laws or regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)–(c)) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d)).

Finally, pursuant to the amendments contained in the Energy Independence and Security Act of 2007 (EISA 2007), Public Law 110–140, any final rule for new or amended energy conservation standards promulgated after July 1, 2010, is required to address standby mode and off mode energy use. (42 U.S.C. 6295(gg)(3)) Specifically, when DOE adopts a standard for a covered product after that date, it must, if justified by the criteria for adoption of standards under EPCA (42 U.S.C. 6295(o)), incorporate standby mode and off mode energy use into a single standard, or, if that is not feasible, adopt a separate standard for such energy use for that product. (42 U.S.C. 6295(gg)(3)(A)–(B)) DOE's current test procedures for portable ACs address standby mode and off mode energy use, as do the new standards adopted in this final rule.

B. Background

DOE has not previously conducted an energy conservation standards rulemaking for portable ACs. Consequently, there are currently no Federal energy conservation standards for portable ACs.

On February 27, 2015, DOE published a notice of public meeting and notice of availability of a preliminary TSD for portable AC energy conservation standards (hereinafter the ''February 2015 Preliminary Analysis''). In the preliminary analysis, DOE conducted in-depth technical analyses in the following areas: (1) Engineering, (2) markups to determine product price, (3) energy use, (4) LCC and PBP, and (5) national impacts. 80 FR 10628. The preliminary TSD that presented the methodology and results of each of these analyses is available at *http://www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0033-0007.*

DOE also conducted, and discussed in the preliminary TSD, several other analyses that supported the major analyses or were expanded upon in the later stages of the standards rulemaking. These analyses included: (1) The market and technology assessment; (2) the screening analysis, which contributes to the engineering analysis; and (3) the shipments analysis,[14] which contributes to the LCC and PBP analysis and national impact analysis (NIA). In addition to these analyses, DOE began preliminary work on the manufacturer impact analysis (MIA) and identified the methods to be used for the consumer subgroup analysis, the emissions analysis, the employment impact analysis, the regulatory impact analysis, and the utility impact analysis. 80 FR 10628 (Feb. 27, 2015).

DOE held a public meeting on March 18, 2015, to discuss the analyses and solicit comments from interested parties regarding the preliminary analysis it conducted. The meeting covered the analytical framework, models, and tools that DOE uses to evaluate potential standards; the results of preliminary analyses performed by DOE for this product; the potential energy conservation standard levels derived from these analyses that DOE could consider for this product; and any other issues relevant to the development of energy conservation standards for portable ACs.

Interested parties commented at the public meeting and submitted written comments regarding the following major issues: Rulemaking schedule with respect to establishing the test procedure, covered product configurations, product classes and impacts on consumer utility, technology options, efficiency levels (ELs), incremental costs, data sources, and cumulative regulatory burden.

Comments received in response to the February 2015 Preliminary Analysis helped DOE identify and resolve issues related to the preliminary analysis. After reviewing these comments, DOE gathered additional information, held further discussions with manufacturers, and completed and revised the various analyses described in the preliminary analysis.

On June 13, 2016, DOE published an energy conservation standards (ECS) notice of proposed rulemaking (hereinafter the ''June 2016 ECS NOPR'') and notice of public meeting. 81 FR 38397. The June 2016 ECS NOPR and accompanying TSD presented the results of DOE's updated analyses and proposed new standards for portable ACs. On July 20, 2016, DOE held a standards public meeting to discuss the issues detailed in the June 2016 ECS NOPR (hereinafter the ''July 2016 STD Public Meeting''). Interested parties, listed in Table II.1, commented on the various aspects of the proposed rule and submitted written comments.

TABLE II.1—INTERESTED PARTIES PROVIDING COMMENTS ON THE JUNE 2016 ECS NOPR FOR PORTABLE ACS

Name	Acronym	Commenter type *
Appliance Standards Awareness Project	ASAP	EA
ASAP, Natural Resources Defense Council, Alliance to Save Energy, American Council for an Energy-Efficient Economy, Consumers Union, Northwest Energy Efficiency Alliance, and Northwest Power and Conservation Council.	The Joint Commenters	EA
Association of Home Appliance Manufacturers	AHAM	TA
De' Longhi Appliances s.r.l	De' Longhi	M
GE Appliances, a Haier Company	GE	M
GREE Electrical Appliance	GREE	M
Industrial Energy Consumers of America	IECA	TA

[14] Industry data track shipments from manufacturers into the distribution chain. Data on national unit retail sales are lacking, but are presumed to be close to shipments under normal circumstances.

TABLE II.1—INTERESTED PARTIES PROVIDING COMMENTS ON THE JUNE 2016 ECS NOPR FOR PORTABLE ACS—Continued

Name	Acronym	Commenter type *
Tomás Carbonell, Environmental Defense Fund (EDF); Rachel Cleetus, Union of Concerned Scientists; Jayni Hein **; Peter H. Howard **; Benjamin Longstreth, NRDC; Richard L. Revesz **; Jason A. Schwartz **; Peter Zalzal, EDF.	The Joint Advocates	EA
Intertek Testing Services	Intertek	TL
JMATEK—Honeywell Authorized Licensee	JMATEK	M
LG Electronics	LG	M
National Association of Manufacturers	NAM	TA
Natural Resources Defense Council	NRDC	EA
Pacific Gas and Electric Company, Southern California Gas Company, San Diego Gas and Electric, and Southern California Edison (the California Investor-Owned Utilities).	California IOUs	U
People's Republic of China	China	GA
Temp-Air	Temp-Air	M
U.S. Chamber of Commerce, American Chemistry Council, American Forest & Paper Association, American Fuel & Petrochemical Manufacturers, American Petroleum Institute, Brick Industry Association, Council of Industrial Boiler Owners, National Association of Manufacturers, National Mining Association, National Oilseed Processors Association.	The Associations	TA

* EA: Efficiency Advocate; GA: Government Agency; M: Manufacturer; RO: Research Organization; TA: Trade Association; TL: Third-party Test Laboratory; U: Utility.

** Institute for Policy Integrity, NYU School of Law; listed for identification purposes only and does not purport to present New York University School of Law's views, if any.

Following the July 2016 STD Public Meeting, DOE gathered additional information and incorporated feedback from comments received in response to the June 2016 ECS NOPR. Based on this information, DOE revised the analyses presented in the June 2016 ECS NOPR for this final rule. The results of these analyses are detailed in the final rule TSD, available in the docket for this rulemaking.

III. General Discussion

DOE developed this final rule after considering verbal and written comments, data, and information from interested parties that represent a variety of interests. The following discussion addresses issues raised by these commenters.

A. Product Classes and Scope of Coverage

When evaluating and establishing energy conservation standards, DOE divides covered products into product classes by the type of energy used or by capacity or other performance-related features that justify differing standards. In making a determination whether a performance-related feature justifies a different standard, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE determines are appropriate. (42 U.S.C. 6295(q))

In the February 2015 Preliminary Analysis, DOE did not consider energy conservation standards for portable ACs other than single-duct or dual-duct portable ACs, as the test procedure proposed at that time did not include provisions for testing other portable ACs. Furthermore, DOE did not separate portable ACs into multiple product classes for the February 2015 Preliminary Analysis following a determination that there is no unique utility associated with single-duct or dual-duct portable ACs.

The test procedure established in the June 2016 TP Final Rule maintained provisions for testing only single-duct and dual-duct portable AC configurations and therefore, in the June 2016 ECS NOPR that was published following the June 2016 TP Final Rule, DOE proposed standards for a single product class of single-duct and dual-duct portable AC configurations. In this final rule, DOE is establishing standards for one product class for all single-duct and dual-duct portable ACs. Comments received relating to the scope of coverage and product classes are discussed in section IV.A of this document.

B. Test Procedure

EPCA sets forth generally applicable criteria and procedures for DOE's adoption and amendment of test procedures. (42 U.S.C. 6293) Manufacturers of covered products must use these test procedures to certify to DOE that their product complies with energy conservation standards and to quantify the efficiency of their product.

With respect to the process of establishing test procedures and standards for a given product, DOE notes that it generally follows the approach laid out in its guidance found in 10 CFR part 430, subpart C, appendix A (Procedures, Interpretations and Policies for Consideration of New or Revised Energy Conservation Standards for Consumer Products). Pursuant to that guidance, DOE endeavors to issue final test procedure rules for a given covered product in advance of the publication of a NOPR proposing energy conservation standards for that covered product.

On May 9, 2014, DOE initiated a test procedure rulemaking for portable ACs by publishing a notice of data availability (hereinafter the ''May 2014 TP NODA'') to request feedback on potential testing options. In the May 2014 TP NODA, DOE discussed various industry test procedures and presented results from its investigative testing that evaluated existing methodologies and alternate approaches that could be incorporated in a future DOE test procedure, should DOE determine that portable ACs are covered products. 79 FR 26639.

On February 25, 2015, DOE published a NOPR (hereinafter the ''February 2015 TP NOPR'') in which it proposed to establish test procedures for single-duct and dual-duct portable ACs. The proposed test procedures were based upon industry methods to determine energy consumption in active modes, off-cycle mode, standby modes, and off mode, with certain modifications to ensure the test procedures are repeatable and representative. 80 FR 10211.

On November 27, 2015, DOE published a supplemental notice of proposed rulemaking (SNOPR) (hereinafter the ''November 2015 TP SNOPR''), in which it proposed revisions to the test procedure proposed in the February 2015 TP NOPR to

improve repeatability, reduce test burden, and ensure the test procedure is representative of typical consumer usage. 80 FR 74020.

On June 1, 2016, following publication of the April 2016 Final Coverage Determination, DOE published the June 2016 TP Final Rule that established test procedures for portable ACs at appendix CC and 10 CFR 430.23(dd). 81 FR 35241. The energy conservation standards established in this final rule are expressed in terms of CEER, in Btu per Wh, based on the seasonally adjusted cooling capacity (SACC), in Btu per hour, as determined in accordance with the DOE test procedure for portable ACs at appendix CC.

In response to the June 2016 ECS NOPR, DOE received comments from interested parties regarding DOE's portable AC test procedures and the associated impacts on the analysis for new standards. The following sections discuss the relevant test procedure comments.

Laboratory Testing Capability

DOE received several comments regarding the timing of the publication of the June 2016 TP Final Rule and manufacturers' opportunity to use the final test procedure in evaluating design options and the proposed standards level from the June 2016 ECS NOPR. GE, AHAM, JMATEK, and China claimed that neither manufacturers nor third-party laboratories have the equipment or expertise to conduct tests according to appendix CC. GE and China commented that laboratories would require additional time and investment to upgrade their test chambers to measure the infiltration air and to fully understand the repeatability and reproducibility of the new test procedure. AHAM stated that, with sufficient time, it expected to identify laboratories that could test enough portable AC models to provide additional test data for DOE's analysis. JMATEK asserted that additional time would be necessary to test its full product line. (GE, Public Meeting Transcript, No. 39 at pp. 17, 64, 129–130; AHAM, Public Meeting Transcript, No. 39 at pp. 14–15, 64; AHAM, No. 43 at p. 3; China, No. 34 at p. 3; JMATEK, No. 40 at p. 2) [15] [16] Intertek stated that it had tested a portable AC according to the test procedures in appendix CC and was able to achieve all required test conditions. (Intertek, No. 37 at p. 1)

In a memo published on August 19, 2016, and titled, ''Memo_AHAM Request for Info on PACs_2016–08–19'' (hereinafter the ''DOE response memo''),[17] DOE stated that it was aware of at least one third-party laboratory capable of testing according to appendix CC. In response to that memo, AHAM commented that a single laboratory cannot do all of the testing necessary for manufacturers to understand the potential impact of the proposed standard within the time allotted, and accordingly, its members have been unable to conduct a sufficient amount of testing to meaningfully participate in this standards rulemaking. (AHAM, No. 43 at p. 3)

As discussed in section III.F of this document, several interested parties requested that DOE extend the June 2016 ECS NOPR comment period to provide manufacturers and test laboratories additional time to gain expertise with the test procedures in appendix CC and collect and analyze performance data to help support the standards rulemaking. To address those comments, on August 8, 2016, DOE published a notice to extend the original comment period for the June 2016 ECS NOPR by 45 days. DOE stated that this extension would allow additional time for AHAM and its members and other interested parties to test existing models to the test procedure; examine the data, information, and analysis presented in the STD NOPR TSD; gather any additional data and information to address the proposed standards; and submit comments to DOE. 81 FR 53961. As discussed further in section IV.C of this final rule, DOE believes that the comment period extension addressed the concerns presented by commenters as this timeline allowed AHAM and its members to conduct testing and provide data for 22 portable AC models, which DOE has incorporated into its analysis.

C. Technological Feasibility

1. General

In each energy conservation standards rulemaking, DOE conducts a screening analysis based on information gathered on all current technology options and prototype designs that could improve the efficiency of the products or equipment that are the subject of the rulemaking. As the first step in such an analysis, DOE develops a list of technology options for consideration in consultation with manufacturers, design engineers, and other interested parties. DOE then determines which of those means for improving efficiency are technologically feasible. DOE considers technologies incorporated in commercially available products or in working prototypes to be technologically feasible. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(i).

After DOE has determined that particular technology options are technologically feasible, it further evaluates each technology option in light of the following additional screening criteria: (1) Practicability to manufacture, install, and service; (2) adverse impacts on product utility or availability; and (3) adverse impacts on health or safety. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(ii)–(iv) Additionally, it is DOE policy not to include in its analysis any proprietary technology that is a unique pathway to achieving a certain efficiency level. Section IV.B of this final rule discusses the results of the screening analysis for portable ACs, particularly the designs DOE considered, those it screened out, and those that are the basis for the standards considered in this rulemaking. For further details on the screening analysis for this rulemaking, see chapter 4 of the final rule TSD.

2. Maximum Technologically Feasible Levels

When DOE adopts a new or amended standard for a type or class of covered product, it must determine the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible for such product. (42 U.S.C. 6295(p)(1)) Accordingly, in the engineering analysis, DOE determined the maximum technologically feasible (''max-tech'') improvements in energy efficiency for portable ACs, using the design parameters for the most efficient products available on the market or in working prototypes. The max-tech levels that DOE determined for this rulemaking are described in section

[15] A notation in the form ''GE, Public Meeting Transcript, No. 39 at pp. 17, 64, 129–130'' identifies an oral comment that DOE received on July 20, 2016 during the NOPR public meeting, and was recorded in the public meeting transcript in the docket for this standards rulemaking (Docket No. EERE–2013–BT–STD–0033). This particular notation refers to a comment (1) made by GE during the public meeting; (2) recorded in document number 39, which is the public meeting transcript that is filed in the docket of this test procedure rulemaking; and (3) which appears on pages 17, 64, and 129 through 130 of document number 39.

[16] A notation in the form ''AHAM, No. 43 at p. 3'' identifies a written comment: (1) Made by the Association of Home Appliance Manufacturers; (2) recorded in document number 43 that is filed in the docket of this standards rulemaking (Docket No. EERE–2013–BT–STD–0033) and available for review at *www.regulations.gov;* and (3) which appears on page 3 of document number 43.

[17] DOE's response memo can be found at *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0033-0038.*

IV.C.1.b of this document and in chapter 5 of the final rule TSD.

D. Energy Savings

1. Determination of Savings

For each TSL, DOE projected energy savings from application of the TSL to portable ACs purchased in the 30-year period that begins in the year of compliance with the standards (2022–2051).[18] The savings are measured over the entire lifetime of products purchased in the 30-year analysis period. DOE quantified the energy savings attributable to each TSL as the difference in energy consumption between each standards case and the no-new-standards case. The no-new-standards case represents a projection of energy consumption that reflects how the market for a product would likely evolve in the absence of energy conservation standards.

DOE used its NIA spreadsheet models to estimate national energy savings (NES) from potential standards for portable ACs. The NIA spreadsheet model (described in section IV.H of this document) calculates energy savings in terms of site energy, which is the energy directly consumed by products at the locations where they are used. For electricity, DOE reports NES in terms of primary energy savings, which is the savings in the energy that is used to generate and transmit the site electricity. For natural gas, the primary energy savings are considered to be equal to the site energy savings. DOE also calculates NES in terms of full-fuel-cycle (FFC) energy savings. The FFC metric includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and thus presents a more complete picture of the impacts of energy conservation standards.[19] DOE's approach is based on the calculation of an FFC multiplier for each of the energy types used by covered products or equipment. For more information on FFC energy savings, see section IV.H.2 of this final rule.

2. Significance of Savings

To adopt any new or amended standards for a covered product, DOE must determine that such action would result in significant energy savings. (42 U.S.C. 6295(o)(3)(B)) Although the term ''significant'' is not defined in the Act, the U.S. Court of Appeals, for the District of Columbia Circuit in *Natural Resources Defense Council* v. *Herrington,* 768 F.2d 1355, 1373 (D.C. Cir. 1985), indicated that Congress intended ''significant'' energy savings in the context of EPCA to be savings that are not ''genuinely trivial.'' The energy savings for all the TSLs considered in this rulemaking, including the adopted standards, are nontrivial, and, therefore, DOE considers them ''significant'' within the meaning of section 325 of EPCA.

E. Economic Justification

1. Specific Criteria

As noted above, EPCA provides seven factors to be evaluated in determining whether a potential energy conservation standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(I)(VII)) The following sections discuss how DOE has addressed each of those seven factors in this rulemaking.

a. Economic Impact on Manufacturers and Consumers

In determining the impacts of potential standards on manufacturers, DOE conducts a MIA, as discussed in section IV.J of this document. DOE first uses an annual cash-flow approach to determine the quantitative impacts. This step includes both a short-term assessment—based on the cost and capital requirements during the period between when a regulation is issued and when entities must comply with the regulation—and a long-term assessment over a 30-year period. The industry-wide impacts analyzed include (1) INPV, which values the industry on the basis of expected future cash flows; (2) cash flows by year; (3) changes in revenue and income; and (4) other measures of impact, as appropriate. Second, DOE analyzes and reports the impacts on different types of manufacturers, including impacts on small manufacturers. Third, DOE considers the impact of standards on domestic manufacturer employment and manufacturing capacity, as well as the potential for standards to result in plant closures and loss of capital investment. Finally, DOE takes into account cumulative impacts of various DOE regulations and other regulatory requirements on manufacturers.

For individual consumers, measures of economic impact include the changes in LCC and PBP associated with new or amended standards. These measures are discussed further in the following section. For consumers in the aggregate, DOE also calculates the national NPV of the economic impacts applicable to a particular rulemaking. DOE also evaluates the LCC impacts of potential standards on identifiable subgroups of consumers that may be affected disproportionately by a national standard.

b. Savings in Operating Costs Compared To Increase in Price

EPCA requires DOE to consider the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered product that are likely to result from a standard. (42 U.S.C. 6295(o)(2)(B)(i)(II)) DOE conducts this comparison in its LCC and PBP analysis.

The LCC is the sum of the purchase price of a product (including its installation) and the operating cost (including energy, maintenance, and repair expenditures) discounted over the lifetime of the product. The LCC analysis requires a variety of inputs, such as product prices, product energy consumption, energy prices, maintenance and repair costs, product lifetime, and discount rates appropriate for consumers. To account for uncertainty and variability in specific inputs, such as product lifetime and discount rate, DOE uses a distribution of values, with probabilities attached to each value.

The PBP is the estimated amount of time (in years) it takes consumers to recover the increased purchase cost (including installation) of a more-efficient product through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost due to a more-stringent standard by the change in annual operating cost for the year that standards are assumed to take effect.

For its LCC and PBP analysis, DOE assumes that consumers will purchase the covered products in the first year of compliance with new or amended standards. The LCC savings for the considered efficiency levels are calculated relative to the case that reflects projected market trends in the absence of new or amended standards. DOE's LCC and PBP analysis is discussed in further detail in section IV.F of this document.

c. Energy Savings

Although significant conservation of energy is a separate statutory requirement for adopting an energy conservation standard, EPCA requires DOE, in determining the economic justification of a standard, to consider the total projected energy savings that are expected to result directly from the

[18] DOE also presents a sensitivity analysis that considers impacts for products shipped in a 9-year period.

[19] The FFC metric is discussed in DOE's statement of policy and notice of policy amendment. 76 FR 51282 (Aug. 18, 2011), as amended at 77 FR 49701 (Aug. 17, 2012).

standard. (42 U.S.C. 6295(o)(2)(B)(i)(III)) As discussed in section III.D.1 of this document, DOE uses the NIA spreadsheet models to project national energy savings.

d. Lessening of Utility or Performance of Products

In establishing product classes, and in evaluating design options and the impact of potential standard levels, DOE evaluates potential standards that would not lessen the utility or performance of the considered products. (42 U.S.C. 6295(o)(2)(B)(i)(IV)) Based on data available to DOE, the standards adopted in this document would not reduce the utility or performance of the products under consideration in this rulemaking.

e. Impact of Any Lessening of Competition

EPCA directs DOE to consider the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from a standard. (42 U.S.C. 6295(o)(2)(B)(i)(V)) It also directs the Attorney General to determine the impact, if any, of any lessening of competition likely to result from a standard and to transmit such determination to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. (42 U.S.C. 6295(o)(2)(B)(ii)) To assist the Department of Justice (DOJ) in making such a determination, DOE transmitted copies of its proposed rule and the NOPR TSD to the Attorney General for review, with a request that the DOJ provide its determination on this issue. In its assessment letter responding to DOE, DOJ concluded that the proposed energy conservation standards for portable ACs are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

f. Need for National Energy Conservation

DOE also considers the need for national energy conservation in determining whether a new or amended standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(VI)) The energy savings from the adopted standards are likely to provide improvements to the security and reliability of the Nation's energy system. Reductions in the demand for electricity also may result in reduced costs for maintaining the reliability of the Nation's electricity system. DOE conducts a utility impact analysis to estimate how standards may affect the Nation's needed power generation capacity, as discussed in section IV.M of this document.

The adopted standards also are likely to result in environmental benefits in the form of reduced emissions of air pollutants and GHGs associated with energy production and use. DOE conducts an emissions analysis to estimate how potential standards may affect these emissions, as discussed in section IV.K of this document; the emissions impacts are reported in section V.B.6 of this final rule. DOE also estimates the economic value of emissions reductions resulting from the considered TSLs, as discussed in section IV.L of this document.

g. Other Factors

In determining whether an energy conservation standard is economically justified, DOE may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII)) To the extent interested parties submit any relevant information regarding economic justification that does not fit into the other categories described above, DOE could consider such information under ''other factors.''

2. Rebuttable Presumption

As set forth in 42 U.S.C. 6295(o)(2)(B)(iii), EPCA creates a rebuttable presumption that an energy conservation standard is economically justified if the additional cost to the consumer of a product that meets the standard is less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable DOE test procedure. DOE's LCC and PBP analyses generate values used to calculate the effect potential new or amended energy conservation standards would have on the payback period for consumers. These analyses include, but are not limited to, the 3-year payback period contemplated under the rebuttable-presumption test. In addition, DOE routinely conducts an economic analysis that considers the full range of impacts to consumers, manufacturers, the Nation, and the environment, as required under 42 U.S.C. 6295(o)(2)(B)(i). The results of this analysis serve as the basis for DOE's evaluation of the economic justification for a potential standard level (thereby supporting or rebutting the results of any preliminary determination of economic justification). The rebuttable presumption payback calculation is discussed in section IV.F of this document.

F. Other Issues

In response to the June 2016 ECS NOPR, DOE received additional comments from interested parties regarding general issues, discussed in the following section.

Establishment of New Standards

AHAM, De' Longhi, GE, Temp-Air, ASAP, and the California IOUs supported DOE's efforts to establish a test procedure and initial energy conservation standards for portable ACs. GE expects that, with the DOE test procedure and standards in place, consumers will be better able to select an appropriately sized portable AC for their cooling needs. ASAP similarly believes that a portable AC test procedure and energy conservation standards would help consumers compare the actual performance of portable ACs and reduce energy consumption, particularly because this is a growing product category and portable ACs use approximately twice as much energy as room ACs. The California IOUs claimed that consumers may use portable ACs as replacements for room ACs and dehumidifiers, and therefore encouraged DOE to set standards that have similar levels of stringency to those products. (AHAM, Public Meeting Transcript, No. 39 at p. 12; AHAM, No. 43 at p. 1; De' Longhi, No. 41 at p. 1; GE, Public Meeting Transcript, No. 39 at pp. 16–17; Temp-Air, No. 45 at p. 1; ASAP, Public Meeting Transcript, No. 39 at p. 10; California IOUs, No. 42 at p. 1)

In this final rule, DOE is establishing energy conservation standards for portable ACs that, pursuant to EPCA (42 U.S.C. 6295(o)(2)(A)), are determined to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified.

NOPR Comment Period and Test Procedure Timing

GE expressed concern about the NOPR proposals due to the lack of time manufacturers and third-party laboratories have had to understand the test procedure. (Public Meeting Transcript, No. 39 at pp. 16–18) AHAM noted that DOE developed the portable AC test procedure in parallel with the standards analysis, which, according to AHAM, minimized manufacturers' ability to participate in the rulemaking. AHAM suggested that manufacturers need at least 6 months between the date of publication of the test procedure and the close of the June 2016 ECS NOPR comment period to gain expertise with the test procedure and collect a sufficient sample of test results to assess

the proposed standards. AHAM asserted that its portable AC test standard, which is referenced by the DOE test procedure with certain adjustments, is not currently used industry-wide by all manufacturers and third-party test laboratories. With sufficient time, AHAM stated that it expects to collect and aggregate manufacturer-provided data under the DOE test procedure to supplement or support DOE's analysis. AHAM noted that in its opinion, the analysis must be based on such data rather than assumptions. (AHAM, Public Meeting Transcript, No. 39 at pp. 13–14, 16, 26–27)

In response to AHAM's request for a comment period extension, on August 15, 2016, DOE extended the comment period for the June 2016 ECS NOPR by 45 days from the original comment deadline of August 12, 2016, to September 26, 2016. 81 FR 53961.

Following the comment period extension, AHAM submitted additional comments expressing concern with DOE's approach to proceed with a standards analysis and development in the absence of a final test procedure. AHAM noted that 42 U.S.C. 6295(r) requires that a new standard must include test procedures prescribed in accordance with 42 U.S.C. 6293, and AHAM stated that it believes this requirement is not effective if a test procedure is not finalized with sufficient time prior to a proposed or final standards rule, limiting the involvement and ability for manufacturers and interested parties to evaluate the standards. In the case of the June 2016 ECS NOPR analysis, AHAM asserted that manufacturers, efficiency advocates, and interested parties have had little experience with the test procedure and have been unable to use it to assess the standards analysis, and in particular the estimated impacts on consumers and manufacturers. AHAM suggested that DOE should not issue a new portable AC standard without determining if it is justified and how consumers, especially those with low and fixed incomes, may be impacted via increased product cost and loss of functionality, features, and choice. (AHAM, No. 43 at pp. 2, 30)

AHAM commented that no standard can pass the substantial evidence test if it is not based on a final test procedure, if one is required, and noted that such test procedure must have been based on a full and useful opportunity for the public to comment on the procedure and its impact on proposed standard levels. AHAM additionally noted that Section 7 of the Process Improvement Rule (10 CFR part 430, subpart C, appendix A) states that DOE will attempt to identify any necessary modifications to establish test procedures when ''initiating the standards development process.'' Further, AHAM stated that section 7(b) states that ''needed modifications to test procedures will be identified in consultation with experts and interested parties early in the screening stage of the standards development process,'' and section 7(c) states that ''final, modified test procedures will be issued prior to the NOPR on proposed standards.'' AHAM commented that the same principles apply to new test procedures and the Process Improvement Rule indicates that it also applies to development of new standards. (AHAM, No. 43 at p. 2)

In response, DOE notes that AHAM and several other interested parties, including, manufacturers, efficiency advocates, utilities, and manufacturer organizations, have participated in every stage of the portable AC standards rulemaking, providing valuable feedback to DOE. As discussed earlier in this section, DOE extended the comment period for the June 2016 ECS NOPR by 45 days from the original comment deadline. With this additional time, AHAM's members were able to test 22 portable ACs according to the test procedures in appendix CC. AHAM provided the test data to DOE, performed a similar analysis to determine appropriate efficiency levels, and recommended a new standards level. Therefore, DOE believes that AHAM has had sufficient time to evaluate the June 2016 ECS NOPR proposal. DOE appreciates AHAM's feedback and has incorporated their information into this final rule analysis.

In addition to its standard LCC analysis, DOE did consider how the standards would affect certain groups of consumers, including senior-only households, low-income households, and small business. Presentation of the approach to the consumer sub-groups development can be found in section IV.I of this document and LCC results can be found in section V.B.1.b of this final rule.

China suggested an additional year for manufacturers to comply with any portable AC standards. (China, No. 34 at p. 3)

EPCA requires that newly-established standards shall not apply to products manufactured within five years after the publication of the final rule. (42 U.S.C. 6295(l)(2)) In accordance with this requirement, compliance with the energy conservation standards established in this final rule will be required 5 years after the date of publication of this standards final rule in the **Federal Register**. This 5-year period is intended to provide manufacturers ample time to assess their product designs and implement any necessary modifications to meet the new standards.

Certification and Enforcement Requirements

The Joint Commenters supported DOE's proposal that portable AC certification reports include CEER and SACC, duct configuration, presence of a heating function, and primary condensate removal feature, noting that these proposed certification reporting requirements will provide useful information both to the public and to DOE for use in a future rulemaking. (Joint Commenters, No. 44 at p. 6) AHAM opposed reporting of the presence of a heating function in the certification reports because the test procedure in appendix CC does not test the heating function and the heating function is not relevant to compliance with DOE's proposed standard. (AHAM, No. 43 at p. 30) DOE is including the reporting requirement for presence of a heating function in this final rule because the information will aid DOE in collecting and analyzing product characteristics in support of future rulemakings, and does not believe that including this reporting requirement represents a substantive burden to manufacturers in preparing certification reports.

JMATEK requested clarification regarding the acceptable tolerance of cooling capacity and efficiency and heating mode measurements, specifically the SACC and CEER tolerances, and detailed information regarding calculating heating mode performance. (JMATEK, No. 40 at p. 2) The certification requirements proposed in the NOPR only require reporting the presence of heating mode and do not require reporting heating mode performance. The provisions in 10 CFR 429.62(a) specify the sampling plan to be used to demonstrate compliance with the portable AC standards, including 10 CFR 429.62(a)(3) and 10 CFR 429.62(a)(4) which provide the rounding requirements for SACC and CEER, respectively. Appendix CC contains test equipment and measurement requirements.

China asked, under the proposed enforcement provision in 10 CFR 429.134(n), whether the certified SACC is valid only if the average measured SACC is within 5 percent of the certified SACC is an upper or lower limit, or both. (China, No. 34 at p. 4) The provision refers to the absolute value of the difference between the measured

SACC and certified SACC, and that difference must be less than 5 percent for the certified SACC to be used to demonstrate compliance; otherwise, the measured value would be used to determine compliance with the standard.

AHAM agreed with DOE's proposed enforcement approach but noted that a 5-percent tolerance might not be enough given the inexperience with the new test procedure. AHAM suggested that DOE should work to understand the variation in that test with regard to determining cooling capacity before deciding on a threshold. (AHAM, No. 43 at p. 30) The 5-percent tolerance on cooling capacity for enforcement is consistent with the tolerance used for packaged terminal air conditioners (PTACs) and packaged terminal heat pumps (PTHPs). Because cooling mode testing for PTACs and PTHPs utilize the same air enthalpy method that is the basis for the cooling mode testing in appendix CC, DOE determined that a similar cooling capacity tolerance for enforcement is appropriate for portable ACs, and thus establishes 5-percent tolerance limit in this final rule.

Dual Coverage

The California IOUs urged DOE to require portable ACs with dehumidification mode to meet the Federal standards for dehumidifiers, and that DOE should include the presence of dehumidification mode in the certification reporting requirements. They noted that the majority of portable ACs currently available for purchase from major retailers are equipped with a dehumidification mode, and the advertised moisture removal capacities for these units are comparable to those of residential dehumidifiers. The California IOUs also noted that certain retailer websites allow consumers to sort and filter listings for portable AC units by moisture removal capacity, and therefore posited that consumer purchasing decisions are likely influenced by the dehumidification capacity. The California IOUs further suggested that consumers may opt for a portable AC unit instead of purchasing a separate dehumidifier, or may use their existing portable AC as a dehumidifier. The California IOUs stated that DOE opted to exclude dehumidification mode from the portable AC test procedure because it determined dehumidification mode operating hours are insignificant, based on the assessment of a metered study, even though the study included only 19 sites from two states and participants were informed of the test purpose and scope prior to the study. Therefore, the California IOUs suggested that the study did not accurately estimate the consumer propensity for using dehumidification mode, as it did not capture consumers purchasing, or repurposing, a portable AC with the intent of also using it as a dehumidifier. The California IOUs suggested that if portable ACs are not covered under the Federal standards for dehumidifiers, DOE should require that portable ACs with dehumidification mode also meet the Federal energy conservation standards for dehumidifiers when operating in that mode and require that manufacturers indicate the presence of dehumidification mode as a certification requirement, similar to the same requirement for heating mode. According to the California IOUs, this additional requirement would mandate that moisture removal performed by portable ACs is tested and labeled in accordance with DOE requirements for residential dehumidifiers, and as a result, consumers would be better-informed when making purchasing decisions. The California IOUs stated that this would ensure that standards for residential dehumidifiers are not circumvented by multi-functional units such as portable ACs. (California IOUs, No. 42 at p. 2)

Dehumidification naturally occurs as a result of the refrigeration-based air-cooling process. However, air conditioning products are typically optimized to remove sensible heat, while dehumidifiers are optimized to remove latent heat, so they would achieve different operating efficiencies when dehumidifying. Additionally, the definition for dehumidifier in 10 CFR 430.2 specifically excludes air conditioning products (portable ACs, room ACs, and packaged terminal ACs) to avoid ambiguity as to what would be classified as a dehumidifier. Therefore, portable ACs would not be subject to energy conservation standards for dehumidifiers. Furthermore, requiring portables ACs to be tested, labeled, and certified for performance in dehumidification mode according to the same requirements as for residential dehumidifiers would be *de facto* establishing coverage of the product as both a portable AC and a dehumidifier, and such multiple classification is not allowable under the definition of ''covered product'' established in EPCA. (42 U.S.C. 6291(2))

IV. Methodology and Discussion of Related Comments

This section addresses the analyses DOE has performed for this rulemaking with regard to portable ACs. Separate subsections address each component of DOE's analyses.

DOE used several analytical tools to estimate the impact of the standards considered in this document. The first tool is a spreadsheet that calculates the LCC savings and PBP of potential amended or new energy conservation standards. The NIA uses a second spreadsheet tool that provides shipments projections and calculates NES and NPV of total consumer costs and savings expected to result from potential energy conservation standards. DOE uses the third spreadsheet tool, the Government Regulatory Impact Model (GRIM), to assess manufacturer impacts of potential standards. These three spreadsheet tools are available on the DOE website for this rulemaking: *https://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/76.* Additionally, DOE used output from the latest version of the Energy Information Administration's (EIA)'s *Annual Energy Outlook* (*AEO*) for the emissions and utility impact analyses.

A. Market and Technology Assessment

DOE develops information in the market and technology assessment that provides an overall picture of the market for the products concerned, including the purpose of the products, the industry structure, manufacturers, market characteristics, and technologies used in the products. This activity includes both quantitative and qualitative assessments, based primarily on publicly-available information. The subjects addressed in the market and technology assessment for this rulemaking include: (1) A determination of the scope of the rulemaking and product classes, (2) manufacturers and industry structure, (3) existing efficiency programs, (4) shipments information, (5) market and industry trends, and (6) technologies or design options that could improve the energy efficiency of portable ACs. The key findings of DOE's market assessment are summarized below. See chapter 3 of the final rule TSD for further discussion of the market and technology assessment.

1. Definition and Scope of Coverage

DOE conducted the February 2015 Preliminary Analysis based on the portable AC definition proposed in the February 2015 TP NOPR, which stated that a portable AC is an encased assembly, other than a ''packaged terminal air conditioner,'' ''room air conditioner,'' or ''dehumidifier,'' that is designed as a portable unit to deliver cooled, conditioned air to an enclosed space. A portable AC is powered by

single-phase power and may rest on the floor or elevated surface. It includes a source of refrigeration and may include additional means for air circulation and heating. 80 FR 10212, 10215 (Feb. 25, 2015).

In the April 2016 Final Coverage Determination, DOE codified this definition at 10 CFR 430.2, with minor editorial revisions that did not modify the intent or scope of the definition:

A portable encased assembly, other than a ''packaged terminal air conditioner,'' ''room air conditioner,'' or ''dehumidifier,'' that delivers cooled, conditioned air to an enclosed space, and is powered by single-phase electric current. It includes a source of refrigeration and may include additional means for air circulation and heating. 81 FR 22514 (April 18, 2016).

NAM requested clarification regarding what is considered a spot cooler and what products are covered under the energy conservation standards proposed in the June 2016 ECS NOPR. NAM stated that there are approximately five small business manufacturers in the U.S. that produce ''portable commercial ACs,'' which they consider to be niche products manufactured on a case-by-case basis. NAM suggested that these small business manufacturers are unsure if the test procedure is applicable to their products, as 90 to 95 percent of them operate on single-phase power, and are unsure as well if their products would be covered under the proposed energy conservation standards. Temp-Air commented that their products are intended for temporary applications and the usage environment for their products is different than those products currently under consideration. Temp-Air stated that its portable AC market share is less than 0.1 percent of DOE's annual projected portable AC shipments volume. Therefore, Temp-Air urged DOE to revise and clarify its portable AC definition to exclude single-phase models destined for commercial industrial applications. NAM and Temp-Air commented that classifying these products as covered products obliges small business manufacturers to expend a significant amount of their research and development (R&D) budgets to save a limited amount of overall energy due to the low shipments volume. NAM and Temp-Air claimed that if the small business manufacturers' products are expected to meet the proposed conservation standards, these manufacturers will be unable to take on the additional costs and will close. (NAM, Public Meeting Transcript, No. 39 at pp. 19–20, 110; Temp-Air, No. 45 at p. 1) During the July 2016 STD Public Meeting, DOE clarified that in the April 2016 Final Coverage Determination, DOE established a definition of all portable ACs that are considered to be covered products that could be subject to test procedures or standards. Under EPCA, a ''consumer product'' is any article of a type that consumes, or is designed to consume, energy and which, to any significant extent, is distributed in commerce for personal use or consumption by individuals. (42 U.S.C. 6291(1)) EPCA further specifies that the definition of a consumer product applies without regard to whether the product is in fact distributed in commerce for personal use or consumption by an individual. (42 U.S.C. 6291(1)(B)) DOE's definition of ''portable air conditioner'' excludes units that could normally not be used in a residential setting by including only those portable ACs that are powered by single-phase electric current. Thus, any product with single-phase power that otherwise meets the definition of a portable AC is a covered product, regardless of the manufacturer-intended application or installation location.

However, DOE also clarified in the July 2016 STD Public Meeting that not every product that meets the definition of portable AC may be subject to DOE's test procedures and standards. As DOE explained, only those products that meet the definition of single-duct or dual-duct portable AC, as established in the June 2016 TP Final Rule, would be subject to the appendix CC test procedure and the standards proposed in the June 2016 ECS NOPR. DOE maintains this approach in this final rule, and establishes energy conservation standards only for products that meet the definition of single-duct or dual-duct portable AC as codified 10 CFR 430.2

2. Product Classes

When evaluating and establishing energy conservation standards, DOE divides covered products into product classes by the type of energy used or by capacity or other performance-related features that justify a different standard. In making a determination whether a performance-related feature justifies a different standard, DOE must consider such factors as the utility to the consumer of the feature and other factors DOE determines are appropriate. (42 U.S.C. 6295(q))

Portable ACs recently became a covered product when DOE issued the April 2016 Final Coverage Determination on April 18, 2016, and therefore do not have existing energy conservation standards or product class divisions. 81 FR 22514.

a. Preliminary Analysis and Notice of Proposed Rulemaking (NOPR) Proposals

Following an evaluation of the portable AC market in preparation of the February 2015 Preliminary Analysis, DOE determined that there are three types of duct configurations that affect product performance: Single-duct, dual-duct, and spot cooler. DOE noted in the February 2015 Preliminary Analysis that the DOE test procedure proposed in the February 2015 TP NOPR did not include measures of spot cooler performance, and, therefore, as discussed previously, DOE did not consider standards for spot coolers. See chapter 3 of the preliminary TSD for more information.

DOE further evaluated if there was any consumer utility associated with the single-duct and dual-duct configurations under consideration. As detailed in chapter 3 of the preliminary TSD, DOE investigated installation locations and noise levels, and found that duct configuration had no impact on either of these key consumer utility variables. Therefore, DOE determined in the February 2015 Preliminary Analysis that a single product class is appropriate for portable ACs.

In the June 2016 ECS NOPR, DOE proposed to maintain the February 2015 Preliminary Analysis approach, in which only single-duct and dual-duct portable ACs would be considered for potential standards as one product class. For portable ACs that can be optionally configured in both single-duct and dual-duct configurations, DOE further proposed that operation in both duct configurations be certified under any future portable AC energy conservation standards. In the June 2016 TP Final Rule, DOE subsequently required that if a product is able to operate as both a single-duct and dual-duct portable AC as distributed in commerce by the manufacturer, it must be tested and rated for both duct configurations. 81 FR 35241, 35247 (June 1, 2016).

b. Comments and Responses

ASAP, the Joint Commenters, and the California IOUs supported a single product class for portable ACs and agreed with DOE's conclusion that there is no consumer utility associated with duct configuration. The California IOUs further stated that although aesthetics is an important consumer utility, product images from several major online retailers (*e.g.,* Best Buy, Home Depot, and Sears) typically do not display the ducts and therefore, duct configuration is likely not a major consideration for consumers when assessing the aesthetics of a portable AC unit. (ASAP, Public Meeting Transcript, No. 39 at p.

37; Joint Commenters, No. 44 at p. 4–5; California IOUs, No. 42 at p. 1)

AHAM opposed a single product class for portable ACs and instead proposed that DOE define separate product classes for single-duct and dual-duct portable ACs. AHAM argued that dual-duct units are not as portable as single-duct units, primarily due to having two hoses instead of one. AHAM also noted that one hose is typically longer with a greater pressure drop, so a larger diameter hose is needed. (AHAM, Public Meeting Transcript, No. 39 at p. 36; AHAM, No. 43 at p. 9)

AHAM further asserted that a recent AHAM consumer survey showed that size and weight of a unit are important considerations for consumers, and that nearly seven of ten portable AC owners indicated that duct configuration was a key purchase factor. AHAM concluded from this survey that duct configuration does offer a unique consumer utility and therefore is a basis for separate product classes. (AHAM, No. 43 at p. 9)

In addition to the consumer utility factors of installation locations and product noise, which DOE previously determined did not depend on duct configuration, DOE considered other factors raised by AHAM that could justify separate product classes for portable ACs based on duct configuration. For all units in its test sample, DOE observed that the ducts are similarly constructed from plastic in a collapsible design, and typically weigh approximately 1 pound, as compared to overall product weights ranging from 45 to 86 pounds. DOE also notes that all dual-duct units in its test sample had the same size and length ducts for the condenser inlet and exhaust ducts. DOE does not expect the minimal weight increase associated with a second duct to have a significant impact on consumer utility in terms of portability. Further, DOE has observed no consistent efficiency improvement associated with either single-duct or dual-duct portable ACs. Accordingly, duct configuration would not justify different standards. Therefore, DOE maintains the approach used in the February 2015 Preliminary Analysis and June 2016 ECS NOPR and establishes a single product class for portable ACs in this final rule.

3. Technology Options

In the preliminary market and technology assessment, DOE identified 16 technology options in four different categories that would be expected to improve the efficiency of portable ACs, as measured by the DOE test procedure, shown in Table IV.1:

TABLE IV.1—TECHNOLOGY OPTIONS FOR PORTABLE AIR CONDITIONERS—FEBRUARY 2015 PRELIMINARY ANALYSIS

Increased Heat-Transfer Surface Area:
1. Increased frontal coil area.
2. Increased depth of coil (add tube rows).
3. Increased fin density.
4. Add subcooler to condenser coil.
Increased Heat-Transfer Coefficients:
5. Improved fin design.
6. Improved tube design.
7. Spray condensate onto condenser coil.
8. Microchannel heat exchangers.
Component Improvements:
9. Improved compressor efficiency.
10. Improved blower/fan efficiency.
11. Low-standby-power electronic controls.
12. Ducting insulation.
13. Improved duct connections.
14. Case insulation.
Part-Load Technology Improvements:
15. Variable-speed compressors.
16. Thermostatic or electronic expansion valves.

In the June 2016 ECS NOPR, DOE noted that propane refrigerant is widely used for portable ACs manufactured and sold internationally, and that R–32 is being introduced in some markets outside the U.S. for portable and room ACs, albeit primarily because it is has a low global warming potential (GWP). Based on this product availability and discussions with manufacturers, DOE included alternative refrigerants as a potential technology option in the technology assessment.

DOE also noted in the June 2016 ECS NOPR that a potential means of improving portable AC efficiencies, air flow optimization, was not included as a technology option in the February 2015 Preliminary Analysis. DOE did, however, consider optimized air flow in the engineering analysis in the February 2015 Preliminary Analysis, and therefore further assessed optimized air flow as a technology option in the June 2016 ECS NOPR.

Therefore, in addition to the technology options considered in the February 2015 Preliminary Analysis, DOE considered alternative refrigerants and air flow optimization in the June 2016 ECS NOPR, as shown in Table IV.2.

TABLE IV.2—TECHNOLOGY OPTIONS FOR PORTABLE AIR CONDITIONERS—JUNE 2016 ECS NOPR ANALYSIS

Increased Heat-Transfer Surface Area:
1. Increased frontal coil area.
2. Increased depth of coil (add tube rows).
3. Increased fin density.
4. Add subcooler to condenser coil.

TABLE IV.2—TECHNOLOGY OPTIONS FOR PORTABLE AIR CONDITIONERS—JUNE 2016 ECS NOPR ANALYSIS—Continued

Increased Heat-Transfer Coefficients:
5. Improved fin design.
6. Improved tube design.
7. Spray condensate onto condenser coil.
8. Microchannel heat exchangers.
Component Improvements:
9. Improved compressor efficiency.
10. Improved blower/fan efficiency.
11. Low-standby-power electronic controls.
12. Ducting insulation.
13. Improved duct connections.
14. Case insulation.
Part-Load Technology Improvements:
15. Variable-speed compressors.
16. Thermostatic or electronic expansion valves.
Alternative Refrigerants:
17. Propane and R–32.
Reduced Infiltration Air:
18. Air flow optimization.

After identifying all potential technology options for improving the efficiency of portable ACs, DOE performed a screening analysis (see section IV.B of this final rule and chapter 4 of the final rule TSD) to determine which technologies merited further consideration in the engineering analysis.

B. Screening Analysis

DOE uses the following four screening criteria to determine which technology options are suitable for further consideration in an energy conservation standards rulemaking:

(1) *Technological feasibility.* Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production and reliable installation and servicing of a technology in commercial products could not be achieved on the scale necessary to serve the relevant market at the time of the projected compliance date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility or product availability.* If it is determined that a technology would have significant adverse impact on the utility of the product to significant subgroups of consumers or would result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the U.S. at the time, it will not be considered further.

(4) *Adverse impacts on health or safety.* If it is determined that a technology would have significant adverse impacts on health or safety, it will not be considered further.

10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b)

In sum, if DOE determines that a technology, or a combination of technologies, fails to meet one or more of the above four criteria, it will be excluded from further consideration in the engineering analysis. The subsequent sections include comments from interested parties pertinent to the screening criteria and whether DOE determined that a technology option should be excluded (''screened out'') based on the screening criteria.

1. Screened-Out Technologies

Alternative Refrigerants

The Significant New Alternatives Policy (SNAP) final rule, published by the U.S. EPA on April 10, 2015 (hereinafter the ''SNAP rule''), limits the maximum allowable charge of alternative refrigerants in portable ACs to 300 grams for R–290 (propane), 2.45 kilograms for R–32, and 330 grams for R–441A. The SNAP rule limits were consistent with those included for portable room ACs in Underwriter's Laboratories (UL) Standard 484, ''Standard for Room Air Conditioners'' (UL 484), eighth edition. However, the most recent version of UL 484, the ninth edition, reduces the allowable amount of flammable refrigerant (*e.g.,* propane and R–441A) to less than 40 percent of the SNAP limits. Manufacturers informed DOE that the new UL charge limits for propane and other flammable refrigerants in portable ACs are not sufficient for providing the necessary minimum cooling capacity, and therefore it would not be feasible to manufacture a portable AC with propane or R–441A for the U.S. market while complying with the UL safety standard. DOE reviewed propane refrigerant charges for portable ACs available internationally and found a typical charge of 300 grams. DOE also investigated other similar AC products that utilize propane refrigerant and found that the minimum charge for capacities in a range expected for portable ACs was 265 grams, which is still greater than the maximum allowable propane charge for portable ACs in the ninth edition of UL 484. Therefore, although portable ACs are currently available internationally with charge quantities of propane acceptable under the SNAP rule, manufacturers are unable to sell those products in the U.S. market while complying with the ninth edition of UL 484. Accordingly, in the June 2016 ECS NOPR DOE screened out propane and other flammable refrigerants as a design option for portable ACs as they would not be practicable to manufacture while meeting all relevant safety standards.

AHAM agreed with DOE's determination that although portable ACs are currently available internationally with amounts of flammable refrigerants, such as propane, manufacturers are unable to sell those products in the U.S. market while complying with the ninth edition of UL 484. (AHAM, No. 43 at p. 14)

The California IOUs disagreed with DOE's decision to screen out alternative refrigerants as a technology option, because the most common refrigerant for portable air conditioners (R–410A) will likely be prohibited in California and Europe in favor of more efficient alternatives by the 2021 effective date, and the analysis in the June 2016 ECS NOPR did not consider the likely state of the industry in 2021. The California IOUs also suggested that DOE consider the 2016 strategy proposal by the California Air Resources Board (CARB) that is likely to push the industry towards more efficient refrigerants, such as R–32 and R–290. The California IOUs noted that this climate pollutant reduction strategy proposes to limit the 100-year GWP of refrigerants in portable ACs to 750, and would also be effective in 2021. The proposal effectively prohibits the sale of portable ACs that use the R–410A refrigerant in California. The authors of the proposal note that AC refrigerants are likely to meet this requirement due to a fluorinated GHG regulation by the European Union (EU) and a White House Council on Environmental Quality pledge of $5 billion over the next 10 years in research of low-GWP refrigerants for refrigerators and air conditioning equipment. The California IOUs noted that while the 2016 CARB strategy is still in the proposal stage, the EU regulation will take effect in 2020, and Article 11 of this regulation prohibits placing on the market any ''movable room air-conditioning equipment'' that contains hydrofluorocarbon (HFC) refrigerants with GWP of 150 or more. The regulation would likely prohibit both R–410A and R–32. The California IOUs stated that, in response, manufacturers such as De' Longhi and GREE have begun producing portable ACs using R–290, which is claimed to be 10 percent more efficient than its R–410A counterpart. (California IOUs, No. 42 at p. 3)

The Joint Commenters stated that although DOE screened out propane due to the refrigerant charge limitations of the UL safety standards, UL certification has failed to become an industry standard for portable ACs, and TopTenReviews' list of the 10 best portable ACs of 2016 includes four units that are not UL-certified. (Joint Commenters, No. 44 at p. 3)

DOE believes that UL certification is a key consumer protection program that ensures the operational safety of portable ACs. Manufacturers implementing propane in their portable ACs would not be able to receive UL certification for their products, which may result in significant adverse safety impacts. Accordingly, DOE continued to screen propane (R–290) from further consideration in this final rule analysis.

In the June 2016 ECS NOPR, DOE noted that certain room ACs commercially available on the U.S. market utilize the mildly flammable R–32, but it was not aware of any portable ACs available in the U.S. market or on other markets that incorporate R–32. Because this technology has not been incorporated in commercial products or in working prototypes for portable ACs, DOE screened out R–32 refrigerant as a technology option.

In response to the June 2016 ECS NOPR, AHAM agreed with DOE's proposal to screen out R–32 refrigerant because the UL standard, which is based on the elevation of the installed product and did not specifically assess use of R–32 in portable ACs that sit on the floor. AHAM and GE noted that the UL standard does not preclude, but also does not consider, the high pressure refrigeration system inside the room. Instead, it considers a compressor outside the room. Therefore, even if the UL safety standard currently does not preclude use of R–32 in portable ACs based on charge limits, these commenters urged DOE to further consider any safety concerns that might arise from a compressor and refrigeration system inside the room. AHAM also commented that efficiency gains associated with R–32 are currently unknown, and due to higher static pressure, the portable AC refrigeration system would need to be redesigned for the use of this refrigerant. (AHAM, No. 43 at pp. 13–14; GE, Public Meeting Transcript, No. 39 at pp. 45–46)

In response to the June 2016 ECS NOPR, other commenters generally stated that R–32 is a viable alternative refrigerant for portable ACs that would improve efficiency. ASAP and LG noted that the R–32 charge limit in UL 484 (approximately 1 kilogram) would not preclude use of R–32 in portable ACs, and ASAP stated that one manufacturer claims a 10-percent reduction in energy

use with R–32 as compared to R–410A for other similar products such as PTACs. ASAP, NRDC, and the Joint Commenters disagreed with DOE's decision to screen out R–32 as a viable technology option and urged DOE to include it in the final rule engineering analysis due to the expected increase in efficiency as compared to R–410A. The Joint Commenters stated that manufacturers claim a 10-percent reduction in energy use using R–32 in PTACs and that Oak Ridge National Laboratory (ORNL) found that R–32 demonstrates a 1 to 6-percent higher coefficient of performance across a range of test conditions compared to R–410A in mini-split ACs engineered for R–410A. The Joint Commenters further claimed, albeit without further supporting information, that portable ACs designed for R–32 should be capable of outperforming R–410A by an even higher margin. The California IOUs recommended that DOE consider certain non-U.S. models already utilizing the R–32 refrigerant, claiming that these models would meet both CARB and UL requirements. The California IOUs suggested that DOE test these models when determining the maximum observed efficiency level used for TSL 3. ASAP, NRDC, and the Joint Commenters further stated that, regardless of DOE's approach in the final rule, manufacturers would have the option of using R–32 as a way to improve portable AC efficiency and achieve the proposed energy conservation standards. (ASAP, Public Meeting Transcript, No. 39 at pp. 11–12, 42–43; LG, Public Meeting Transcript, No. 39 at p. 45; NRDC, Public Meeting Transcript, No. 39 at p. 43; Joint Commenters, No. 44 at pp. 3–4; California IOUs, No. 42 at p. 3)

To evaluate the commenters' estimates of the reduction in energy use and increase in efficiency for R–32 as compared to R–410A and to identify any other performance impacts, DOE further investigated changes in performance associated with switching to R–32. As discussed in chapter 3 of the final rule TSD, DOE reviewed multiple studies and experiments conducted on other air conditioning products which suggested performance improvements when switching to R–32 ranging from 2 to 5 percent for cooling capacity and 1 to 4 percent for efficiency, depending upon the test conditions. DOE notes that the models referenced by the California IOUs are not sold in the U.S., and therefore were not included in this rulemaking analysis.

Nonetheless, because R–32 is a viable refrigerant based on the UL safety requirements and because the information provided by interested parties and described in various studies consistently indicate performance improvements through the use of this refrigerant, in this final rule DOE maintained R–32 as a potential design option for improving portable AC efficiency.

Duct Insulation

In the February 2015 Preliminary Analysis, DOE identified duct insulation as a potential means for improving portable AC efficiency, as less heat from the condenser air would be transferred through the duct wall and would instead be transferred out of the conditioned space. During interviews, manufacturers indicated that they have considered insulated ducts to improve performance but have not identified any insulated ducts that are collapsible for packaging and shipping. No portable AC in DOE's teardown sample for the engineering analysis included insulated ducts. In the absence of a collapsible design, such an insulated duct would need to be packaged for shipment in its fully expanded configuration, significantly increasing the package size. Because of this significantly increased packaging size for non-collapsible insulated ducts and unavailability on the market of collapsible designs, DOE determined that insulated ducts are not technologically feasible, are impractical to manufacture and install, and would impact consumer utility. Therefore, DOE screened out insulated ducts as a design option for portable ACs in the February 2015 Preliminary Analysis and in the June 2016 ECS NOPR.

AHAM agreed with DOE's assessment of duct insulation, because incorporating such a design option would significantly increase shipping costs and weight of the product, and could also cause it to be more difficult for consumers to install and eventually store the product in the off season. (AHAM, No. 43 at p. 12)

2. Additional Comments

AHAM noted that DOE modeled and considered only four of the sixteen retained design options in the engineering analysis and provided reasons for not modeling seven other design options that were retained from the screening analysis. AHAM argued that the retention of these seven design options is not justified if they are not used in the engineering analysis for the various reasons provided in the June 2016 ECS NOPR and STD NOPR TSD. AHAM proposed that DOE remove the design options that were not considered in the June 2016 ECS NOPR engineering analysis. (AHAM, No. 43 at pp. 9–10)

In the market and technology assessment, DOE identifies all technology options that may increase portable AC efficiency. The screening analysis eliminates certain technology options from further consideration based on the four criteria outlined at 10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b). Any technology options meeting the four criteria are considered in the engineering analysis. However, DOE does not necessarily incorporate all of the retained technologies in developing the cost-efficiency relationship. Any technology options meeting the screening criteria but not included as a means to improve efficiency in the engineering analysis are discussed further in section IV.C of this document.

Increased Heat-Transfer Surface Area

In the June 2016 ECS NOPR, DOE considered increased heat exchanger area as a technology option that passed the screening analysis and was implemented in the engineering analysis as a design approach for reaching higher efficiency levels. DOE considered up to a 20-percent heat exchanger area increase and determined that the associated increase in weight and case size would not significantly impact consumer utility.

The Joint Commenters agreed with DOE's conclusion that all available data suggest that heat exchanger areas can be increased by 20 percent and represents a significant improvement to the analysis to better capture the full range of potential efficiency improvements. (Joint Commenters, No. 44 at p. 5)

AHAM disagreed with DOE's assertion that ability to move, install, or store the product would not be impacted if the case dimensions were to change to accommodate a 20 percent larger heat exchanger. AHAM argued that an increased heat exchanger size would increase the overall case size and increase weight, thereby impacting consumer utility by making the product more difficult to move from room to room and, particularly, up and down stairs. AHAM therefore urged DOE to remove increased heat exchanger area from the design approaches to reach higher efficiency levels and screen out this technology option. AHAM also commented that, although DOE did not indicate how much weight an increased heat exchanger might add to a product, AHAM determined from data gathered by its members that a heat exchanger area increase associated with a 4,000 Btu/h capacity increase would correlate to an average product weight increase of 16.6 pounds. AHAM further suggested that current portable ACs are already

pushing the limits of a ''single lift'' product, and further increases in the size and weight could push the product from being a ''single lift'' to a ''dual lift'' product, which would impact portability. AHAM concluded that because consumers will likely not accept increased size and/or weight, DOE should screen out increased heat exchanger area as a technology option and should not use it as a design option in its analysis of higher efficiency levels. (AHAM, Public Meeting Transcript, No. 39 at pp. 44–45, 72; AHAM, No. 43 at p. 17)

As discussed in chapter 5 of the final rule TSD, DOE does not expect that the increase in heat exchanger size, and the resulting increases in case size and weight, would impact product portability. In addition to noting that all portable ACs equipped with wheels, which assist in changing locations on the same floor, DOE found the typical unit weight increase would be limited to about 6 percent, or less than 5 pounds, at the maximum heat exchanger size increase of 20 percent, which did not result in any units in DOE's test sample requiring additional lifting assistance compared to what would already be required with the currently reported unit weight. Additional detail can be found in chapter 5 of the final rule TSD. DOE also notes that the heat exchanger size increases do not necessarily affect the depth of the product case, typically a portable AC's smallest dimension, and would not preclude any units with this technology option from fitting through doorways, hallways, or stairwells.

For these reasons, DOE retained the technology option of a 20-percent heat exchanger area increase in the final rule screening analysis.

Air Flow Optimization

As discussed in section IV.A.3 of this document, in the June 2016 ECS NOPR DOE noted that a potential means of improving portable AC efficiencies, air flow optimization, was not included as a technology option in the February 2015 Preliminary Analysis. DOE did, however, consider optimized air flow in the engineering analysis in the February 2015 Preliminary Analysis, and therefore further assessed optimized air flow and included it as a technology option in the June 2016 ECS NOPR.

AHAM requested that DOE define ''optimized airflow'' and demonstrate a specific efficiency improvement that corresponds to it; otherwise, AHAM asserted, this design option is too uncertain and should be screened out. AHAM suggested that if optimized airflow means reducing the flow over the condenser, that approach would be a safety concern for single-duct units, as the condenser must to be cooled for safe operation of the unit. (AHAM, No. 43 at p. 14)

Chapter 3 of the NOPR TSD explains that optimized airflow refers to the reduction of infiltration air. Further, the optimized airflow technology option satisfies all four of the screening criteria, and it was therefore further considered in the final rule engineering analysis. However, as discussed in section IV.C of this document, DOE has determined that manufacturers would likely not rely on optimized airflow to improve portable AC efficiency because of the limited impact on performance under the test procedures in appendix CC.

3. Remaining Technologies

Through a review of each technology, DOE concludes that all of the other identified technologies listed in section IV.A.3 of this document met all four screening criteria to be examined further as design options in DOE's final rule analysis. In summary, DOE did not screen out the following technology options, as shown in Table IV.3:

TABLE IV.3—REMAINING DESIGN OPTIONS FOR PORTABLE AIR CONDITIONERS

Increased Heat-Transfer Surface Area:
1. Increased frontal coil area.
2. Increased depth of coil (add tube rows).
3. Increased fin density.
4. Add subcooler to condenser coil.
Increased Heat-Transfer Coefficients:
5. Improved fin design.
6. Improved tube design.
7. Spray condensate onto condenser coil.
8. Microchannel heat exchangers.
Component Improvements:
9. Improved compressor efficiency.
10. Improved blower/fan efficiency.
11. Low-standby-power electronic controls.
12. Improved duct connections.
13. Case insulation.
Part-Load Technology Improvements:
14. Variable-speed compressors.
15. Thermostatic or electronic expansion valves.
Reduced Infiltration Air:
16. Air flow optimization.
Alternative Refrigerants:
17. R–32.

DOE determined that these technology options are technologically feasible because they are being used or have previously been used in commercially-available products or working prototypes. DOE also finds that all of the remaining technology options meet the other screening criteria (*i.e.,* practicable to manufacture, install, and service and do not result in adverse impacts on consumer utility, product availability, health, or safety). For additional details, see chapter 4 of the final rule TSD.

C. Engineering Analysis

In the engineering analysis, DOE establishes the relationship between the manufacturer production cost (MPC) and improved portable AC efficiency. This relationship serves as the basis for cost-benefit calculations for individual consumers, manufacturers, and the Nation. DOE typically structures the engineering analysis using one of three approaches: (1) Design option, (2) efficiency level, or (3) reverse engineering (or cost assessment). The design-option approach involves adding the estimated cost and associated efficiency of various efficiency-improving design changes to the baseline product to model different levels of efficiency. The efficiency-level approach uses estimates of costs and efficiencies of products available on the market at distinct efficiency levels to develop the cost-efficiency relationship. The reverse-engineering approach involves testing products for efficiency and determining cost from a detailed bill of materials (BOM) derived from reverse engineering representative products. The efficiency ranges from that of the least-efficient portable AC sold today (*i.e.,* the baseline) to the maximum technologically feasible efficiency level. At each efficiency level examined, DOE determines the MPC; this relationship is referred to as a cost-efficiency curve.

In the preliminary engineering analysis, DOE used a hybrid approach of the design-option and reverse-engineering approaches described above. This approach involved physically disassembling commercially available products, reviewing publicly available cost information, and modeling equipment cost. From this information, DOE estimated the MPCs for a range of products available at that time on the market. DOE then considered the steps manufacturers would likely take to improve product efficiencies. In its analysis, DOE determined that manufacturers would likely rely on certain design options to reach higher efficiencies. From this information, DOE estimated the cost and efficiency impacts of incorporating specific design options at each efficiency level.

In the June 2016 ECS NOPR, DOE followed the same general approach as for the preliminary engineering analysis, but modified the analysis based on the test procedure for portable ACs in appendix CC, comments from interested parties, and the most current available information.

For this final rule, DOE largely maintained the approach from the NOPR, with slight modifications to incorporate feedback from interested parties and further refinements to the engineering analysis. This section provides more detail on the development of efficiency levels and determination of MPCs in the final rule engineering analysis.

1. Efficiency Levels

a. Baseline Efficiency Levels

A baseline unit typically just meets current energy conservation standards and provides basic consumer utility. Because there are no existing energy conservation standards for portable ACs, DOE observed whether units tested with lower efficiencies incorporated similar design options or features, and considered these features when defining a baseline configuration. To determine energy savings that will result from a new energy conservation standard, DOE compares energy use at each of the higher efficiency levels to the energy consumption of the baseline unit. Similarly, to determine the changes in price to the consumer that will result from an energy conservation standard, DOE compares the price of a unit at each higher efficiency level to the price of a unit at the baseline.

DOE noted in chapter 5 of the preliminary analysis TSD that the air flow pattern through a portable AC has a significant effect on measured cooling capacity and energy efficiency ratio, as determined according to test method proposed in the February 2015 Test Procedure NOPR (the current proposal at the time of the preliminary analysis). For units that draw air from the conditioned space over the condenser and then exhaust it outside of the conditioned space, an equivalent amount of infiltration air must enter the conditioned space due to the net negative pressure differential that is created between the conditioned and unconditioned spaces. Because the test conditions proposed in the February 2015 Test Procedure NOPR specify that infiltration air would be at a higher temperature than the conditioned air, the infiltration air offsets a portion of the cooling provided by the portable AC. The greater the amount of infiltration air, the lower the overall cooling capacity will be. Based on the measured condenser exhaust air flow rates and the corresponding calculated magnitudes of the infiltration air heating effect, DOE determined in the February 2015 Preliminary Analysis that single-duct units (*i.e.,* units that draw all of the condenser intake air from within the conditioned space and exhaust to the unconditioned space via a duct) would represent the baseline efficiency level for portable ACs.

After the February 2015 Preliminary Analysis, DOE established the portable AC test procedure in appendix CC, which incorporates two cooling mode test conditions and weighting factors to determine overall performance. Because the additional test condition is at a lower outdoor temperature and has a significantly larger weighting factor than the original test condition, the impact of infiltration air on overall performance is greatly reduced. Therefore, the approach of considering a baseline unit to be a single-duct portable AC with typical system components was no longer valid. DOE instead pursued an alternate analysis approach in the June 2016 ECS NOPR, which utilized the results from all units in DOE's test sample, including 24 portable ACs (one test sample was tested in both a single-duct and dual-duct configuration) covering a range of configurations, product capacities, and efficiency as tested according the DOE test procedure in appendix CC.

DOE developed a relationship between cooling mode power and SACC, which is a measure of cooling capacity that weights the performance at each of the cooling mode test conditions in appendix CC, using a best fit power curve. DOE then used this relationship to develop an equation to determine nominal CEER for a given SACC based on the results of DOE's testing according to the test procedure in appendix CC, shown below.

$$NOPR\ Nominal\ CEER = \frac{SACC}{(2.7447 \times SACC^{0.6829})}$$

In the June 2016 ECS NOPR, DOE then assessed the relative efficiency of each unit in the test sample by comparing the measured CEER from testing to the nominal CEER as defined by the equation above (DOE will refer to this ratio of actual CEER to nominal CEER as the performance ratio (PR) for a given unit). DOE proposed to define baseline performance as a PR of 0.72, which is based on the minimum PR observed for units in the test sample. Additional details on the baseline units are in chapter 5 of the NOPR TSD.

AHAM objected to the methodology used to determine the baseline level proposed in the June 2016 ECS NOPR, stating that the limited data sample was not representative of the minimum performance of products on the market and that it would have been able to provide test data on a wide range of products if the test procedure had been finalized earlier. Nonetheless, AHAM stated that the combined DOE and newly developed AHAM data set suggests that DOE's proposed baseline level is reasonable. (AHAM, No. 43 at pp. 4, 14)

During the July 2016 STD Public Meeting and in a subsequent request for data and information submitted to DOE on July 21, 2016,[20] AHAM requested the R value and R squared value for the regression curve used to develop the nominal CEER equation in the June 2016 ECS NOPR. (AHAM, Public Meeting Transcript, No. 39 at p. 72) AHAM additionally submitted a supplemental request for data and information on July 27, 2016, in which it requested the raw tested and modeled data used to perform the CEER and SACC calculations for all 24 units in DOE's test sample.[21] DOE provided the R value (0.7420) and R squared value (0.6424) in the DOE response memo, which was accompanied by files containing the requested data for all of DOE's test units. Although AHAM further sought to obtain model numbers for units in the test sample to ascertain how representative DOE's 24 test units were of the U.S. market, DOE identified test units only by sample number in order to maintain confidentiality of the results. (AHAM, No. 43 at pp. 4, 14)

AHAM also expressed concern that DOE did not appear to have run a complete test using the final test procedure and instead relied on a significant amount of modeled data. (AHAM, No. 43 at p. 4) As discussed in the June 2016 ECS NOPR and during the July 2016 STD Public Meeting, all

[20] AHAM's July 21, 2016 request for data and information can be found at *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0033-0029.*

[21] AHAM's July 27, 2016 supplemental request for data and information can be found at *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0033-0030.*

product capacities and efficiencies considered for the June 2016 ECS NOPR analysis were consistent with the appendix CC test procedures. Additionally, modeling was not required to determine the performance of the 18 single-duct portable ACs in DOE's test sample. DOE modeled the performance of the seven dual-duct portable ACs at the lower temperature test condition required in appendix CC.

After the June 2016 ECS NOPR analysis, AHAM compiled additional test data from its members for 22 portable ACs whose results are listed in Table IV.4. (AHAM, No. 43 at pp. 3, 5–6)

TABLE IV.4—AHAM MEMBER TEST DATA

Unit	Configuration	Tested CEER (Btu/Wh)	SACC (Btu/h)	Cooling power (W)	PR
A	Single-Duct	5.81	6507.57	807.75	0.91
E	Single-Duct	5.88	6950.00	846.00	0.90
J	Single-Duct	6.82	8242.83	861.75	0.98
D	Single-Duct	4.75	4033.24	579.71	0.90
H	Single-Duct	4.46	4737.80	740.13	0.79
S	Single-Duct	6.27	7692.11	854.25	0.92
G	Single-Duct	6.47	8152.20	879.26	0.93
C	Single-Duct	5.00	5159.80	636.00	0.86
K	Single-Duct	5.20	6702.80	790.50	0.81
N	Single-Duct	5.50	8334.20	958.50	0.78
P	Single-Duct	6.50	9393.00	971.25	0.88
B	Single-Duct	6.78	6687.50	990.00	1.05
L	Single-Duct	5.48	3411.44	581.10	1.11
F	Single-Duct	5.97	4474.20	988.90	1.09
M	Single-Duct	5.46	6836.43	1206.00	0.84
R	Single-Duct	5.01	7031.25	1238.00	0.76
Q	Single-Duct	4.79	6371.60	1281.00	0.76
O	Single-Duct	5.21	5362.36	914.00	0.88
T	Single-Duct	5.63	5324.20	869.00	0.96
W	Single-Duct	6.35	7012.40	1031.00	0.97
Z	Single-Duct	6.17	8190.80	1253.00	0.89
U	Single-Duct	6.28	8854.60	1312.00	0.87

AHAM analyzed the combined sample set of its and DOE's data, totaling 47 units, to determine the best-fit power regression, a new nominal CEER equation (shown below), and the relative efficiency of each unit in the combined test sample by comparing the measured CEER from testing to the new nominal CEER. AHAM confirmed DOE's conclusion in the June 2016 ECS NOPR that efficiency would typically increase with capacity, but estimated different coefficients in the nominal CEER equation. (AHAM, No. 43 at pp. 3, 5–6)

$$AHAM's\ Nominal\ CEER = \frac{SACC}{(4.9775 \times SACC^{0.6065})}$$

In conducting this final rule engineering analysis, DOE included the data supplied by AHAM and also reassessed its own test data and performance modeling. DOE corrected minor errors in its test data and more accurately represented the modeled performance of dual-duct units operating at the lower 83 °F test condition. For those units where the user manual clearly states that the fan operates continuously during off-cycle mode, DOE included the off-cycle mode power in this final rule analysis.

For the final rule, DOE updated the relationship between cooling mode power and SACC and the subsequent nominal CEER equation to reflect the revised set of test and modeled data. The resulting updated nominal CEER equation is shown below.

$$Nominal\ CEER = \frac{SACC}{(3.7117 \times SACC^{0.6384})}$$

DOE reassessed the PRs for each unit and found the baseline value to be 0.67, which is the minimum PR observed in the combined test sample. Although this baseline PR value is lower than the value of 0.72 presented in the June 2016 ECS NOPR, applying the new value to the updated nominal CEER curve results in a baseline efficiency level curve for this final rule that closely matches the baseline efficiency level analyzed in the June 2016 ECS NOPR. Additional details on the baseline units efficiency level are included in chapter 5 of the final rule TSD.

b. Higher Energy Efficiency Levels

DOE develops incremental efficiency levels based on the design options manufacturers would likely use to improve portable AC efficiency. While certain technology options identified in Table IV.1 of this final rule and discussed in chapter 3 of the final rule TSD meet all the screening criteria and may produce energy savings in certain real-world situations, DOE did not further consider each of them in the engineering analysis because specific efficiency gains were either not clearly

defined or the DOE test procedure would not capture those potential improvements. Such technology options that were not considered are: (1) Adding a subcooler or condenser coil, (2) increasing the heat transfer coefficients, (3) improving duct connections, (4) improving case insulation, (5) implementing part-load technologies, and (6) substituting R–32 for the commonly used R–410A refrigerant. Further discussion of these technology options and the reasons why DOE tentatively concluded that they would be unlikely to be implemented to improve efficiency can be found in chapter 5 of the final rule TSD.

i. June 2016 Standards NOPR Proposal

In the February 2015 Preliminary Analysis, DOE conducted its engineering analysis, including defining efficiency levels, assuming that manufacturers would rely on airflow optimization to improve portable AC efficiencies. However, for the June 2016 ECS NOPR analysis, DOE updated the efficiency levels to reflect performance based on appendix CC, which was different from the proposed test procedure that was the basis of the February 2015 Preliminary Analysis. Appendix CC includes a second cooling mode outdoor test condition for dual-duct units and infiltration air conditions for both single-duct and dual-duct units. The CEER metric for both single-duct and dual-duct units includes a weighted-average measure of performance at the two cooling mode test conditions, along with measures of energy use in standby and off modes. Appendix CC does not include provisions proposed in the February 2015 TP NOPR for measuring case heat transfer.

As discussed in the February 2015 Preliminary Analysis, although the initial test procedure proposal included a CEER metric that combined energy use in cooling mode, heating mode, and various low-power modes, the preliminary analysis was conducted using cooling mode energy efficiency ratio (EER_{cm}) as the basis for energy conservation standards because cooling is the primary function for portable ACs, and DOE expected that manufacturers would likely focus on improving efficiency in this mode to achieve higher CEERs. Because appendix CC does not include a heating mode test and includes a second cooling mode test condition, the CEER metric as codified combines the performance at both cooling mode test conditions with energy use in the low-power modes. Accordingly, DOE utilized CEER as the basis for its proposed portable AC energy conservation standards in the June 2016 ECS NOPR. DOE also based the June 2016 ECS NOPR analysis on the SACC measured in appendix CC, a weighted average of the adjusted cooling capacities at the two cooling mode test conditions.

The two cooling mode test conditions in appendix CC are weighted based on the percentage of annual hours for each test condition, on average, for geographical locations that correspond to expected portable AC ownership. The majority (80 percent) of the total hours were estimated to relate to the lower of the two outdoor temperatures, 83 degrees Fahrenheit (°F) dry-bulb. Because at this lower outdoor temperature, there is only a 3 °F dry-bulb temperature differential and subsequent 0.38 Btu per pounds of dry air enthalpy differential between the indoor and outdoor air, the potential impact of infiltration air heating effects on the overall CEER metric is substantially reduced. For this reason, DOE found no significant relationship between duct configuration or air flow optimization and improved efficiency, and therefore alternatively considered component efficiency improvements as the primary means to increase CEER in the June 2016 ECS NOPR engineering analysis. Accordingly, in the June 2016 ECS NOPR, DOE defined its efficiency levels, other than the max-tech, based on the performance observed in its test sample, independent of duct configuration or level of air flow optimization.

As discussed previously in section IV.C.1.a, in the June 2016 ECS NOPR, DOE characterized and compared performance among all portable ACs in its test sample and determined a relationship between SACC and a general representation of expected CEER. DOE then assessed individual unit performance relative to this nominal CEER relationship and identified a baseline efficiency level at PR = 0.72, with PR defined as the ratio of actual CEER to nominal CEER.

For Efficiency Level 2 (EL 2), DOE determined the PR that corresponded to the maximum available efficiency across a full range of capacities (1.14), and then selected an intermediate Efficiency Level 1 (EL 1) based on a PR between the baseline and EL 2 (0.94). For Efficiency Level 3 (EL 3), DOE identified the PR for the single highest efficiency unit observed in its test sample (1.31).

Due to the variations in performance among units in DOE's test sample, DOE conducted additional performance modeling to augment its test data when estimating efficiency and manufacturing costs at each efficiency level. DOE numerically modeled component improvements for each of the 21 out of 24 test units for which detailed component information were available to estimate potential efficiency improvements to existing product configurations. The component improvements were performed in three steps for each unit.

The first incremental improvement for each unit included a 10-percent increase in heat exchanger frontal area and raising the compressor energy efficiency ratio (EER) to 10.5 Btu/Wh, the maximum compressor efficiency identified at the time of the February 2015 Preliminary Analysis.

The second incremental component efficiency improvement step for each unit included a 15-percent increase in heat exchanger frontal area from the original test unit and an improvement in compressor efficiency to an EER of 11.1 Btu/Wh, which DOE identified as the maximum efficiency for currently available single-speed R–410A rotary compressors of the type typically found in portable ACs and other similar products. As with the 10-percent heat exchanger area increase, DOE expected that a chassis size and weight increase would be necessary to fit a 15-percent increased heat exchanger, but concluded that portability and consumer utility would not be significantly impacted.

DOE included all available design options in the third efficiency improvement step for each unit, including a 20-percent increase in heat exchanger frontal area from the original test unit, more efficient electronically commutated motor (ECM) blower motor(s), and a variable-speed compressor with an EER of 13.7 Btu/Wh. DOE concluded that a 20-percent increase in heat exchanger size was the maximum allowable increase for consumer utility and portability to be retained, as discussed in section IV.B.2 of this document. DOE also improved standby controls efficiency in this final step, adjusting the standby power for each test unit to the minimum observed standby power of 0.46 watts (W) in its test sample. With these design options modeled for units in its test sample, DOE found that the single, theoretical maximum-achievable efficiency among all modeled units corresponded to a PR of 1.75, which DOE defined as Efficiency Level 4 (EL 4).

Table IV.5 summarizes the specific improvements DOE considered when modeling the performance of higher efficiency design options applied to each test unit in the June 2016 ECS NOPR. Depending on the unit, these design options could be associated with

different efficiency levels above the baseline.

TABLE IV.5—COMPONENT IMPROVEMENTS SUMMARY—JUNE 2016 ECS NOPR

Heat exchanger area (% increase)	Compressor EER (Btu/Wh)	Blower motor (type)	Standby (watts)
10%	10.5 (single-speed)	(1)	
15%	11.1 (single-speed)		
20%	13.7 (variable-speed)	ECM (variable-speed)	0.46

[1] No blower motor or standby power changes were applied to the first two incremental steps.

In the June 2016 ECS NOPR, DOE analyzed efficiency levels according to the original nominal CEER equation previously discussed and the PR values listed in Table IV.6:

$$Minimum\ CEER = PR \times \frac{SACC}{(2.7447 \times SACC^{0.6829})}$$

TABLE IV.6—PORTABLE AIR CONDITIONER EFFICIENCY LEVELS AND PERFORMANCE RATIOS—JUNE 2016 ECS NOPR

Efficiency level	Efficiency level description	Performance ratio (PR)
Baseline	Minimum Observed	0.72
EL 1	Intermediate Level	0.94
EL 2	Maximum Available for All Capacities	1.14
EL 3	Maximum Observed	1.31
EL 4	Max-Tech (Maximum of Modeled Component Improvements)	1.75

Figure IV.1 plots each efficiency level curve for SACCs from 50 to 10,000 Btu/h, based on the June 2016 ECS NOPR nominal CEER curve scaled by the PR assigned to each efficiency level.

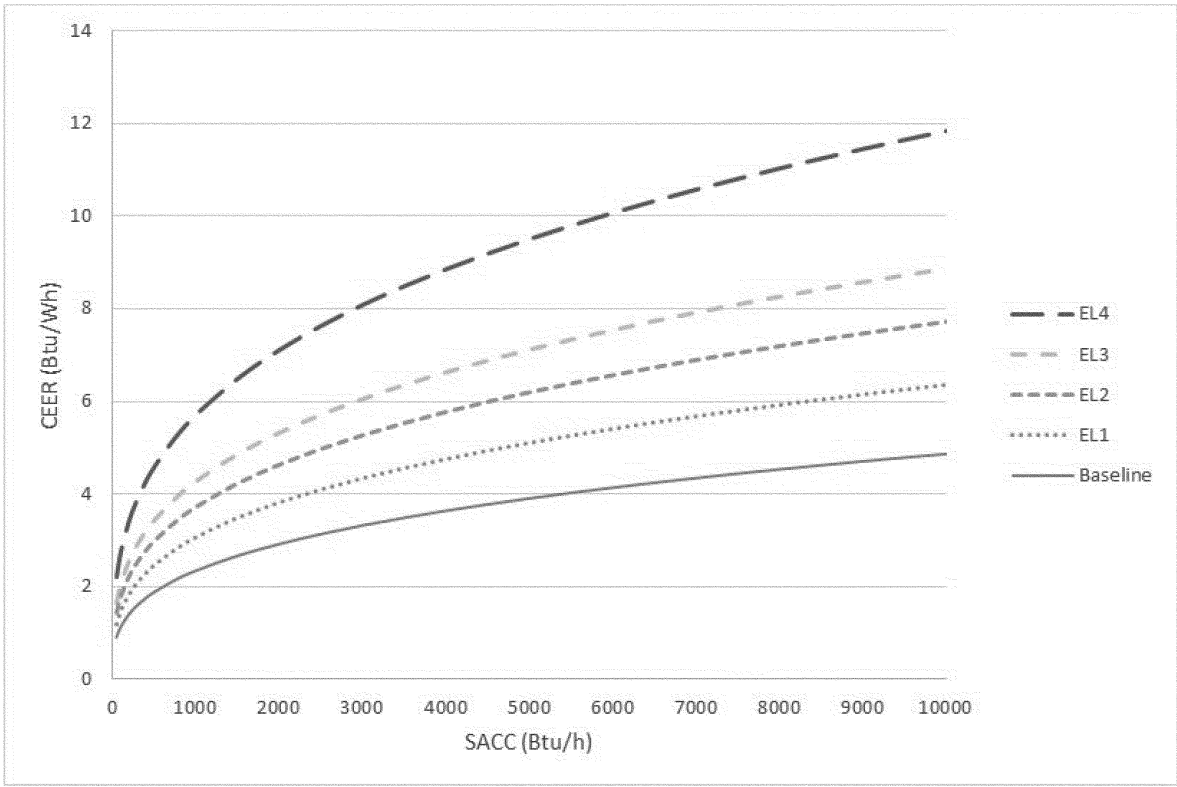

Figure IV.1 Portable Air Conditioner Efficiency Level Curves – June 2016 ECS NOPR

Additional details on the selection of efficiency levels in the June 2016 ECS NOPR may be found in chapter 5 of the NOPR TSD.

ii. June 2016 Standards NOPR Comments and Responses

Variable Speed Compressors

ASAP and the Joint Commenters agreed with DOE's consideration of variable-speed compressors in the STD NOPR analysis and agreed that they can improve both part-load and full-load efficiency. (ASAP, Public Meeting Transcript, No. 39 at pp. 72; Joint Commenters, No. 44 at p. 5) The California IOUs supported the inclusion of variable-speed compressors as a technology option and, although DOE was unable to identify any portable AC models that utilize variable-speed compressors, they suggested that DOE consider models, such as the Climax VS12. (California IOUs, No. 42 at p. 2)

AHAM noted that the test procedure proposed at the time of the June 2016 ECS NOPR would not capture any efficiency gains associated with implementing a variable-speed compressor for single-duct units, as there is no part-load requirement for single-duct portable ACs and the test is conducted at one temperature. AHAM therefore suggested that DOE not consider variable-speed compressors for single-duct portable ACs in the engineering analysis. AHAM suggested that the burden and costs of implementing a variable-speed compressor for portable ACs would outweigh the efficiency gains and it would also lead to larger and heavier enclosures (20-percent larger chassis). AHAM also stated that manufacturers would need to use inverter controls that are costly and would also require an electronic expansion valve to modulate refrigerant flow differently as compared to a single-speed compressor, both of which are costly design options. (AHAM, No. 43 at p. 13)

DOE included variable-speed compressors as a design option in the June 2016 ECS NOPR because of their high efficiency during continuous operation, and not for their part-load capability. As discussed in chapter 5 of the June 2016 ECS NOPR TSD, DOE modeled each test unit with a variable-speed compressor with an EER of 13.7 Btu/Wh, representative of the maximum available compressor efficiency for the capacity range appropriate for portable ACs. This EER is consistent with the EER of the compressor used in the Climax VS12 unit identified by the California IOUs. DOE's estimates for efficiency improvements in the June 2016 ECS NOPR were based on the maximum operational efficiency and did not consider part-load efficiency gains. Therefore, DOE's consideration of variable-speed compressors is appropriate for both single-duct and dual-duct portable ACs in this final rule analysis. In addition, DOE's analysis accounted for the higher costs when incorporating variable-speed compressors, including their more costly controls. DOE also modeled larger case sizes that would accommodate larger heat exchangers, and the larger case sizes would also accommodate variable-speed compressors and their associated components.

Improved Compressor Efficiency and Availability

AHAM agreed with DOE's assessment of inertia and scroll compressors, stating that implementing these compressors would significantly affect portability and consumer utility of the product. AHAM noted that a portable AC is used entirely inside a home with no portion

of the portable AC located outside, and therefore, noise and vibration may be a concern for a more efficient compressor that would be noisier, larger, and more costly to implement. (AHAM, No. 43 at p. 11)

Consistent with the June 2016 ECS NOPR analysis, DOE did not consider inertia or scroll compressors in developing the final rule efficiency analysis.

AHAM commented that determining the sizes of compressors available in the future for portable ACs may be difficult considering that manufacturers may begin developing compressors for alternative refrigerants. AHAM therefore suggested that DOE determine the future availability of current compressors through discussions with compressor manufacturers. AHAM agreed with DOE's assessment that moving to EL 3 or EL 4 would force manufacturers to remove certain portable AC cooling capacities from the market due to compressor availability being driven by room ACs. (AHAM, No. 43 at pp. 11, 17)

The Joint Commenters suggested that DOE's concerns regarding the availability of high-efficiency compressors to meet higher efficiency levels are unwarranted. They noted that because portable ACs are a newly covered product, the lead time between the publication of the final rule and the compliance date will be 5 years, and therefore, manufacturers and component suppliers, including compressor manufacturers, will have 5 years to develop new products and components. The Joint Commenters further noted that the markets for both room ACs and dehumidifiers will likely drive increased production of high-efficiency compressors, especially because the next room AC standard is scheduled to take effect no later than 2022 and DOE is funding a project conducted by ORNL in partnership with GE to develop a 13 EER room AC. The Joint Commenters also noted that dehumidifiers use similar components as portable ACs and a new ENERGY STAR specification for dehumidifiers that will take effect later this year is likely to drive increased compressor efficiencies. The Joint Commenters asserted that available compressor efficiencies typically increase over time, as seen in the recent room AC rulemaking, and it is therefore reasonable to expect that the available efficiencies of both single-speed and variable-speed compressors will increase in the years before a portable AC standard takes effect. The Joint Commenters concluded that the long lead time before the portable AC standard would take effect, along with multiple market drivers, would ensure adequate availability of high-efficiency compressors to meet higher efficiency levels. (Joint Commenters, No. 44 at pp. 1–3)

DOE conducts its analyses based on currently available information. Accordingly, DOE has analyzed compressor efficiencies for compressors currently available to manufacturers. While the highest efficiency single-speed and variable-speed compressors are available in the appropriate capacity range for portable ACs, the number of models and different capacities available may not be sufficient to cover the entire range of portable AC capacities a manufacturer would include in its product line. The 5-year period prior to compliance with the standards established in this final rule may allow compressor manufacturers sufficient time to develop components and products for a range of efficiencies. However, as stated in the June 2016 ECS NOPR, compressor availability for portable ACs is largely driven by the room AC market. Compressors optimized for room AC operation are not necessarily optimal for portable ACs. Therefore, DOE maintains its concerns regarding availability of the highest efficiency single-speed and variable-speed compressors for portable ACs, and took these concerns into account when establishing the standards in this final rule.

Case Insulation

In chapter 5 of the June 2016 ECS NOPR TSD, DOE concluded that adding insulation to the product case would result in little or no improvement compared to existing product cases. Because heat transfer through the case has a minimal impact on overall cooling capacity, the test procedure adopted in appendix CC does not include a measurement of case heat transfer.

AHAM proposed that because DOE is not aware of any portable ACs that use additional case insulation, it should be removed as a technology option due to the lack of data. AHAM observed that DOE did not include a measure of case heat transfer in the CEER metric in appendix CC because DOE concluded it was insignificant, and therefore any energy savings would not be captured by the test procedure and would have no impact on the standards analysis. (AHAM, No. 43 at p. 12)

DOE identified case insulation as a technology option because it may improve the efficiency of portable ACs when operated in the field, albeit by a small amount. This technology option satisfies all four of the screening analysis criteria, and was therefore retained in the screening analysis and considered in the engineering analysis. However, case insulation was not considered as a means manufacturers would likely use to improve efficiency in the June 2016 ECS NOPR engineering analysis due to its insignificant impact on capacity. DOE adopts that same approach in this final rule.

Improved Duct Connections and Airflow Optimization

In chapter 5 of the June 2016 ECS NOPR TSD, DOE noted that no units in the test sample provided additional sealing in the duct connections. DOE, therefore, lacked information regarding leakage rates and potential savings associated with reducing condenser air leakage to the room, and did not further consider the improvements associated with improved duct connections in the June 2016 ECS NOPR.

The Joint Commenters noted that while DOE was unable to incorporate improved duct connections as a technology option in the June 2016 ECS NOPR engineering analysis due to lack of data, manufacturers may be able to improve duct connections as a way to improve efficiency. (Joint Commenters, No. 44 at p. 4)

AHAM commented that it has no information regarding the heat impacts of air leakage at the duct connections and, based on DOE's own assessment and lack of data, proposed that DOE remove this as a design option. (AHAM, No. 43 at p. 12)

DOE notes that although duct connections were not ultimately implemented to reach higher efficiency levels in the June 2016 ECS NOPR engineering analysis, this technology option satisfies all four of the screening analysis criteria and was therefore retained in the screening analysis and considered in the engineering analysis. DOE adopts that same approach in this final rule.

Improved Standby Controls

In chapter 5 of the June 2016 ECS NOPR TSD, DOE discussed improved standby efficiency as a component improvement in the engineering analysis.

AHAM asserted that there is no substantial gain from improving standby power of electronic controls in terms of improving efficiency and therefore proposed that DOE remove it as a technology option as there will be an insignificant impact when compared to overall portable AC energy consumption. (AHAM, No. 43 at p. 11)

DOE observes that improved standby power would positively impact CEER, and the impact would be measurable,

albeit small, under appendix CC. Because appendix CC can quantify the effect of improved standby power and because DOE observed this design option in use in its test sample, DOE considered it in the June 2016 ECS NOPR engineering analysis and in this final rule. Further, DOE notes that EPCA requires that DOE address standby mode and off mode energy use in its energy conservation standards. (42 U.S.C. 6295(gg)(3))

Microchannel Heat Exchangers

In the chapter 5 of the June 2016 ECS NOPR TSD, DOE concluded that because portable ACs already include many design options to improve heat transfer in the evaporator and condenser, and because it lacked information on the potential efficiency gains with microchannel heat exchangers, microchannel heat exchangers were not considered in the engineering analysis as a design option to reach increased portable AC efficiencies. DOE expected that manufacturers would most likely rely on increased heat exchanger cross sectional areas to improve heat transfer and increase efficiencies.

AHAM agreed with DOE and further stated that microchannel heat exchangers do not work well for portable ACs because they are more suitable for the condenser rather than the evaporator due to the difficulty in draining condensing water. AHAM also commented that, because portable ACs spray condensed water onto the condenser to increase the heat exchange, poor draining capability will also affect the condenser. AHAM also asserted that microchannel heat exchangers are complicated, extremely expensive to implement, and easily retain more dirt in the unit, decreasing cooling performance at a much faster rate. (AHAM, No. 43 at pp. 10–11)

ASAP and the Joint Commenters noted that the NOPR engineering analysis did not consider potential efficiency gains from microchannel heat exchangers, which may be utilized by manufacturers to meet the portable AC energy conservation standards. The Joint Commenters referenced research performed in 2006 that found microchannel condensers can result in a 6- to 10-percent increase in refrigeration system efficiency, and additional research for mobile air conditioning that indicated that microchannel heat exchangers can increase efficiency by 8 percent. (ASAP, Public Meeting Transcript, No. 39 at pp. 67–68; Joint Commenters, No. 44 at p. 4)

DOE agrees that microchannel heat exchangers are associated with efficiency improvements, but also agrees with AHAM regarding the complexity of incorporating these heat exchangers into portable ACs. Due to the issues in implementing microchannel heat exchangers and the lack of information regarding their use in portable ACs, DOE maintains the June 2016 ECS NOPR approach for this final rule analysis, in which DOE does not consider this design option in the engineering analysis because it expects that manufacturers would instead rely on increasing heat exchanger cross-sectional areas to increase heat transfer.

Market Distribution

AHAM analyzed the data in the combined sample of portable ACs and concluded that a greater percentage of test units fell short of the proposed efficiency level (TSL 2) than DOE estimated for its own test sample in the June 2016 ECS NOPR. AHAM determined that 17 percent of units in the combined dataset would meet TSL 2, suggesting that 83 percent of the units would require a redesign. Therefore, AHAM proposed that DOE adopt a median PR of 0.90 based on the combined AHAM and DOE data. AHAM stated that a PR of 0.90 would better reflect the current status of units on the market and also would require more reasonable redesigns for manufacturers, especially for a new standard. AHAM noted that its proposed level is between DOE's June 2016 ECS NOPR TSL 1 and TSL 2, and according to AHAM would require a 50-percent redesign of the tested units. (AHAM, No. 43 at pp. 7–8)

As discussed in chapter 5 of the June 2016 ECS NOPR TSD, DOE assessed the number of units that would require a complete product redesign, as opposed to less costly and impactful component improvements, and found that 46 percent of units in the test sample would require a significant product redesign at TSL 2 (see table 5.5.4 in the STD NOPR TSD). Also, DOE's energy conservations standards are not determined solely based on the number of units that would require updates to meet the new levels, but rather the range of criteria discussed in section II.A of this document. These considerations are discussed at length in the June 2016 ECS NOPR and TSD and are reassessed and addressed in this final rule.

As discussed in the following section, DOE considered the combined DOE and AHAM dataset to update its engineering analysis in this final rule.

iii. Final Rule Analysis

For this final rule, DOE maintained the engineering analysis approach utilized in the June 2016 ECS NOPR, with additional modifications and improvements based primarily on comments and data received in response to the June 2016 ECS NOPR. As discussed in in section IV.C.1.a, DOE updated the test data and improved the performance modeling in this final rule and subsequently updated the relationship for nominal CEER based on measured SACC as follows:

$$Nominal\ CEER = \frac{SACC}{(3.7117 \times SACC^{0.6384})}$$

DOE also identified a baseline efficiency level with a PR of 0.67 for this final rule, based on the updated test unit performance.

DOE subsequently adjusted its efficiency levels based on the updated unit performance data utilized in this final rule. For EL 2, DOE determined the PR that corresponded to the maximum available efficiency across a full range of capacities (1.04), and then selected an intermediate efficiency level for EL 1 based on a PR between the baseline and EL 2 (0.85). For EL 3, DOE identified the PR for the single highest efficiency unit observed in its test sample (1.18).

In this final rule, DOE relied on the same numerically modeled component improvements for each of the 21 out of 24 test units considered in the June 2016 ECS NOPR. DOE also modeled component improvements for an additional 2 units for which DOE identified detailed component information. The component improvements were performed in three steps for each unit, similar to the improvements conducted for the June 2016 ECS NOPR engineering analysis. For this final rule, DOE utilized the same component efficiency improvements outlined in Table IV.5, maintaining the same maximum single-speed and variable speed compressor efficiencies (11.1 Btu/Wh and 13.7 Btu/Wh, respectively), the same maximum

percent heat exchanger frontal area increases (20 percent), the switch from a permanent split capacitor (PSC) motor to an ECM for the blower, and a minimum standby power of 0.46 W.

With these design options modeled for units in its test sample, DOE found that the single, theoretical maximum-achievable efficiency among all modeled units corresponded to a PR of 1.62, which DOE defined as EL 4.

DOE emphasizes that the changes listed in Table IV.5 do not uniquely correlate with efficiency levels beyond the baseline. Baseline through EL 3 are defined by the range of test data, while EL 4 is defined by the maximum theoretical PR after modeling all design options listed in Table IV.5.

In this final rule, DOE analyzed efficiency levels based on test samples and modeled performance according to the following equation and the PR values listed in Table IV.7:

$$\text{Minimum CEER} = \text{PR} \times \frac{\text{SACC}}{(3.7117 \times \text{SACC}^{0.6384})}$$

TABLE IV.7—PORTABLE AIR CONDITIONER EFFICIENCY LEVELS AND PERFORMANCE RATIOS—FINAL RULE ANALYSIS

Efficiency level	Efficiency level description	Performance ratio (PR)
Baseline	Minimum Observed	0.67
EL 1	Intermediate Level	0.85
EL 2	Maximum Available for All Capacities	1.04
EL 3	Maximum Observed	1.18
EL 4	Max-Tech (Maximum of Modeled Component Improvements)	1.62

Figure IV.2 plots each efficiency level curve for SACCs from 50 to 10,000 Btu/h, based on the nominal CEER curve scaled by the PR assigned to each efficiency level.

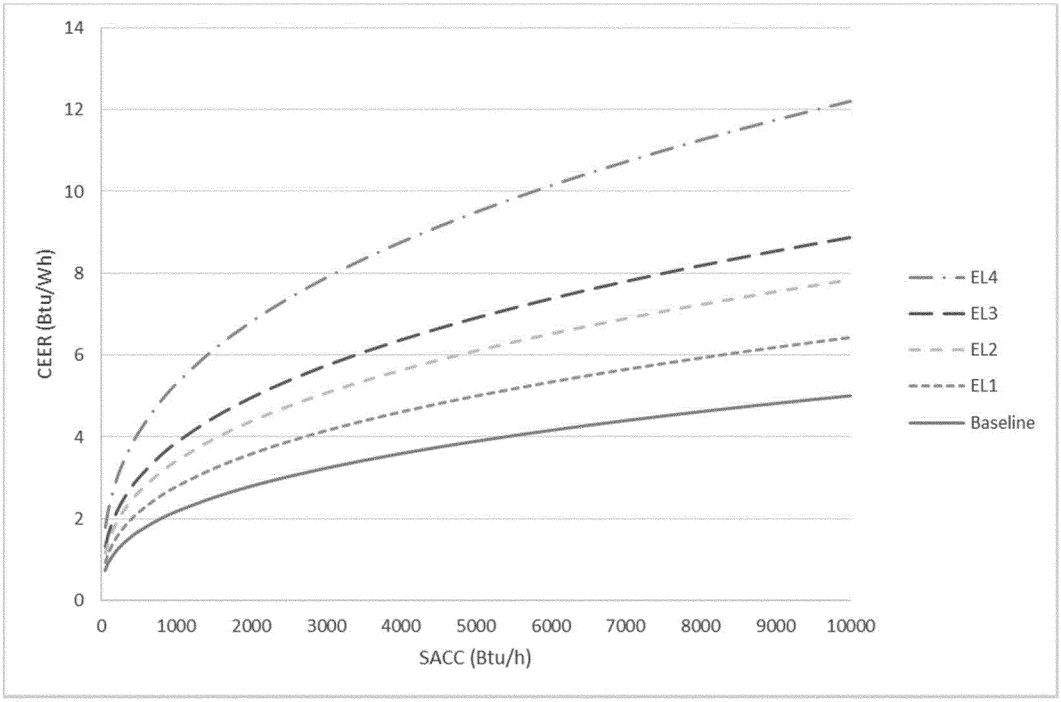

Figure IV.2 Portable Air Conditioner Efficiency Level Curves – Final Rule Analysis

Additional details on the selection of efficiency levels may be found in chapter 5 of the final rule TSD.

2. Manufacturer Production Cost Estimates

In the February 2015 Preliminary Analysis, DOE developed incremental MPC estimates based on the optimized airflow approach to improving efficiencies. For the June 2016 ECS NOPR analysis, DOE developed new incremental MPC estimates based on the changes to the efficiency levels detailed in section IV.C.1 of the June 2016 ECS NOPR, and also based on feedback from interested parties and on information

gathered in additional manufacturer interviews. When assigning costs to efficiency levels in the June 2016 ECS NOPR analysis, DOE considered all units that performed between two efficiency levels as representative of the lower of the two efficiency levels. DOE determined an average baseline MPC based on the units in DOE's test sample with a CEER below EL 1 (PR = 0.94). Six units in the test sample with a market-representative range of capacities tested below EL 1. The average MPC of these six units reflected the baseline MPC for the overall portable AC market.

DOE subsequently determined the costs for all other torn-down and modeled units, and determined the average costs associated with each incremental component efficiency improvement when moving between efficiency levels. In addition to the costs associated with the improved components themselves, DOE also considered the increased costs associated with other related product changes, such as increasing case sizes to accommodate larger heat exchangers.

Although DOE's test and modeled data resulted in a range of PRs from 0.72 to 1.75, DOE noted in the June 2016 ECS NOPR that not all units in its test sample were capable of reaching higher PRs with the identified design option changes. For example, the modeled max-tech PR represented a unit in the test sample that had a high PR as a starting point (near EL 3). Modeling increased heat exchanger sizes and a more efficient compressor in that unit resulted in a higher modeled PR than could be achieved theoretically by applying the same design options to baseline units. For the units that started at lower PRs, DOE expected that manufacturers would have to undertake a complete product redesign and optimization to reach higher PRs, rather than just applying the identified design options. As a result, manufacturers of these units would incur higher MPCs to reach the higher efficiency levels and also significant conversion costs associated with updating their product lines. These conversion costs are discussed further in chapter 12 of the June 2016 ECS NOPR TSD.

In the June 2016 ECS NOPR, DOE found that only three units in the teardown sample would be capable of reaching EL 3 without significant product redesign (*i.e.,* the one unit that tested at EL 3 and two units that could theoretically achieve EL 3 with the highest efficiency single-speed compressors and increasing the heat exchanger area no more than 20 percent). At EL 4 (max-tech), DOE determined all products would require significant product redesigns, as reaching the maximum modeled efficiency would require a 20-percent increase in heat exchanger area and the most efficient variable-speed compressor. DOE noted that manufacturers would likely undertake a product redesign when switching from a single-speed to a variable-speed compressor. Additionally, as discussed in section IV.C.1.b of this document, the ability of a product to reach EL 3 or EL 4 would be dependent on the availability of the most efficient components. However, compressor availability for portable ACs is largely driven by the room AC industry, so the most efficient single-speed and variable-speed compressors may not be available over the entire range of capacities necessary for all portable AC product capacities. As a result, DOE determined that moving to EL 3 or EL 4 may necessitate manufacturers to remove certain portable AC cooling capacities from the market.

For the June 2016 ECS NOPR, DOE calculated all MPCs in 2014 dollars (2014$), the most recent year for which full-year data was available at the time of the analysis. Table IV.8 presents the MPC estimates DOE developed for the June 2016 ECS NOPR.

TABLE IV.8—PORTABLE AIR CONDITIONER INCREMENTAL MANUFACTURER PRODUCTION COSTS (2014$)—JUNE 2016 ECS NOPR

Efficiency level	Incremental MPC (2014$)
Baseline	.....
EL1	$29.78
EL2	45.13
EL3	60.35
EL4	108.99

Additional details on the development of the incremental cost estimates for the June 2016 ECS NOPR analysis may be found in chapter 5 of the June 2016 ECS NOPR TSD.

During the July 2016 STD Public Meeting, AHAM stated it would work to gather and provide to DOE product cost information. (AHAM, Public Meeting Transcript, No. 39 at p. 75–76) GE commented that it was unable to provide accurate cost feedback due to concerns regarding conducting the test procedure and testing units of all duct configurations. (GE, Public Meeting Transcript, No. 39 at p. 18)

AHAM subsequently stated that it and its members were unable to verify the manufacturer product cost estimates in the June 2016 ECS NOPR because all portable ACs are produced overseas, and the new test procedures will require reductions in reported capacities of existing products. AHAM suggested that manufacturers have not yet fully explored the design requirements to reach the various ELs and therefore urged DOE to reassess its engineering and costing analysis to incorporate the effects of both capacity changes and modifications necessary to meet the ELs. AHAM argued that it is not sufficient to say that the costs associated with the capacity changes are incorporated in all ELs from the base case onward because the constraints on size and portability to maintain the product as portable will have significant effects on the practicality of technology options, particularly adding evaporator or condenser coil area. (AHAM, No. 43 at p. 22)

GREE commented that, based on its calculations, larger chassis designs are necessary to meet the proposed standards and consumers are likely unwilling to accept the additional costs associated with tooling. (GREE, Public Meeting Transcript, No. 39 at pp. 21–22)

As discussed in chapter 5 of the June 2016 ECS NOPR TSD, based on the range of observed heat exchanger areas in its test sample, DOE determined that a 20-percent increase in heat exchanger area is an appropriate limit to maintain portability and avoid impacting consumer utility. DOE also notes that all costs necessary to increase heat exchanger areas and the corresponding chassis design changes were considered in the product cost estimates presented in the June 2016 ECS NOPR and are also considered in this final rule. Additionally, DOE accounted for the changes to both CEER and SACC that would result from incorporating the design option changes in its June 2016 ECS NOPR engineering analysis.

AHAM noted that no portable ACs are manufactured in the U.S., and some are manufactured by third-party manufactures instead of by those who market them. Therefore, AHAM does not believe it is possible to characterize the cost structure of Chinese manufacturing plants and ultimately determine the manufacturer costs for overseas manufacturers. During the July 2016 STD Public Meeting and in its July 21, 2016 request for data and information, AHAM requested insight into how the cost model was developed and how DOE is able to estimate the manufacturing costs for portable ACs. (AHAM, Public Meeting Transcript, No. 39 at pp. 76–77)

The DOE response memo stated that DOE accounts for the location of a manufacturing facility when determining labor costs as well as

tooling and equipment costs.[22] Industry financial metrics were estimated using publically available financial information for both manufacturers and importers selling portable ACs in the U.S. DOE also noted that the cost estimates in the June 2016 ECS NOPR accounted for input received from manufacturers and importers during confidential interviews.

For the final rule analysis, DOE followed the same approach as used in the June 2016 ECS NOPR to develop incremental MPC estimates at each efficiency level. DOE updated the incremental MPC estimates from the June 2016 ECS NOPR based on the changes to the ELs detailed in section IV.C.1 of this final rule, feedback from interested parties, improved test unit modeling, and updated cost modeling.

As described in section IV.C.1.a of this final rule, DOE incorporated minor updates to its own data set and included the AHAM test data to determine performance trends and ELs. The adjusted data and slightly different EL curve shape compared to the June 2016 ECS NOPR shifted a few of the data points that would be included in each EL. Additionally, DOE did not have access to the AHAM test units for teardowns or cost modeling, so by necessity relied on its own sample of units to define the representative incremental MPCs at each EL. For this final rule, DOE also calculated all MPCs in 2015$, the most recent year for which full-year data was available at the time of the final rule analysis. Table IV.9 presents the updated MPC estimates DOE developed for this final rule.

TABLE IV.9—PORTABLE AIR CONDITIONER INCREMENTAL MANUFACTURER PRODUCTION COSTS (2015$)—FINAL RULE ANALYSIS

Efficiency level	Incremental MPC (2015$)
Baseline	.....
EL1	$18.95
EL2	50.57
EL3	93.84
EL4	115.53

Additional details on the development of the incremental cost estimates for the final rule analysis may be found in chapter 5 of the final rule TSD.

[22] See p. 4 of the DOE response memo, found at *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0033-0038*.

D. Markups Analysis

The markups analysis develops appropriate markups (*e.g.,* manufacturer markups, retailer markups, distributor markups, contractor markups) in the distribution chain and sales taxes to convert the MPC estimates derived in the engineering analysis to consumer prices, which are then used in the LCC and PBP analysis and in the manufacturer impact analysis. At each step in the distribution channel, companies mark up the price of the product to cover business costs and profit margin. For portable ACs, the main parties in the distribution chain are manufacturers, retailers, and consumers.

The manufacturer markup converts MPC to manufacturer selling price (MSP). DOE developed an average manufacturer markup by examining the annual Securities and Exchange Commission (SEC) 10–K reports filed by publicly-traded manufacturers primarily engaged in appliance manufacturing and whose combined product range includes portable ACs.

DOE developed baseline and incremental markups for the manufacturers and retailers in the distribution chain. Baseline markups are applied to the price of products with baseline efficiency, while incremental markups are applied to the difference in price between baseline and higher-efficiency models (the incremental cost increase). The incremental markup is typically less than the baseline markup, and is designed to maintain similar per-unit operating profit before and after new or amended standards.[23]

DOE relied on economic data from the U.S. Census Bureau to estimate average baseline and incremental markups.

AHAM commented that it strongly disagrees with the concept of incremental markups. According to AHAM, manufacturers, wholesalers, retailers and contractors have all provided numerous amounts of data, studies, and surveys saying that the incremental markup concept has no foundation in actual practice. AHAM asked what additional information DOE would need to reassess the markups approach. AHAM further asked if DOE would agree to put the concept of incremental markups up for peer review. (AHAM, No. 39 at pp. 80–81)

[23] Because the projected price of standards-compliant products is typically higher than the price of baseline products, using the same markup for the incremental cost and the baseline cost would result in higher per-unit operating profit. While such an outcome is possible, DOE maintains that in markets that are reasonably competitive it is unlikely that standards would lead to a sustainable increase in profitability in the long run.

AHAM states that DOE persists in relying on a simplistic interpretation of economic theory that assumes only variable costs can be passed through to customers because economic returns on capital cannot increase in a competitive marketplace. According to AHAM, they and the other associations and industry participants are unanimous in declaring that DOE's conclusions are simply incorrect and that percentage margins throughout the distribution channels have remained largely constant. In addition, AHAM noted that Shorey Consulting has shown that empirical studies of industry structure and other variables have only weak correlation with profitability, demonstrating that the economic theory DOE relies upon is proven not to apply in practice. Rather than continue to debate past each other, AHAM commented that DOE should submit both its work and that of the various industry groups to an independent peer review process. (AHAM, No. 43 at p. 20)

DOE disagrees that the theory behind the concept of incremental markups has been disproved. The concept is based on a simple notion: An increase in profitability, which is implied by keeping a fixed markup percentage when the product price goes up and demand is relatively inelastic, is not likely to be viable over time in a business that is reasonably competitive. DOE agrees that empirical data on markup practices would be desirable, but such information is closely held and difficult to obtain.

Regarding the Shorey Consulting interviews with appliance retailers, although the retailers said that they maintain the same percentage margin after amended standards for refrigerators took effect, it is not clear to what extent the wholesale prices of refrigerators actually increased. There is some empirical evidence indicating that prices may not always increase following a new standard.[24] [25] [26] If this happened to be the case following the new refrigerator standard, then there is no reason to suppose that percentage margins changed either.

DOE's analysis necessarily considers a simplified version of the world of

[24] Spurlock, C.A. 2013. ''Appliance Efficiency Standards and Price Discrimination.'' Lawrence Berkeley National Laboratory Report (LBNL) LBNL–6283E.

[25] Houde, S. and C.A. Spurlock. 2015. ''Do Energy Efficiency Standards Improve Quality? Evidence from a Revealed Preference Approach.'' LBNL LBNL–182701.

[26] Taylor, M., C.A. Spurlock, and H.-C. Yang. 2015. ''Confronting Regulatory Cost and Quality Expectations: An Exploration of Technical Change in Minimum Efficiency Performance Standards.'' Resources for the Future (RFF) 15–50.

appliance retailing; namely, a situation in which other than appliance product offerings, nothing changes in response to amended standards. DOE's analysis assumes that product cost will increase while the other costs remain constant (*i.e.,* no change in labor, material, or operating costs), and asks whether retailers will be able to keep the same markup percentage over time. DOE recognizes that retailers are likely to seek to maintain the same markup percentage on appliances if the price they pay goes up as a result of appliance standards, but DOE contends that over time downward adjustments are likely to occur due to competitive pressures. Some retailers may find that they can gain sales by reducing the markup and maintaining the same per-unit gross profit as they had before the new standard took effect. Additionally, DOE contends that retail pricing is more complicated than a simple percentage margin or markup. Retailers undertake periodic sales and they reduce the prices of older models as new models come out to replace them.[27] [28] [29] Even if retailers maintain the same percent markup when appliance wholesale prices increase as the result of a standard, retailers may respond to competitive pressures and revert to pre-standard average per-unit profits by holding more frequent sales, discounting products under promotion to a greater extent, or discounting older products more quickly. These factors would counteract the higher percentage markup on average, resulting in much the same effect as a lower percentage markup in terms of the prices consumers actually face on average.

DOE acknowledges that its approach to estimating retailer markup practices after amended standards take effect is an approximation of real-world practices that are both complex and varying with business conditions. However, DOE continues to maintain that its assumption that standards do not facilitate a sustainable increase in profitability is reasonable. Chapter 6 of the final rule TSD provides details on DOE's development of markups for portable ACs.

[27] Bagwell, K. and Riordan, M.H., 1991. ''High and declining prices signal product quality.'' The American Economic Review, pp. 224–239.

[28] Betts, E. and Peter, J.M., 1995. ''The strategy of the retail 'sale': Typology, review and synthesis.'' International Review of Retail, Distribution and Consumer Research, 5(3), pp. 303–331.

[29] Elmaghraby, W. and Keskinocak, P., 2003. ''Dynamic pricing in the presence of inventory considerations: Research overview, current practices, and future directions.'' Management Science, 49(10), pp. 1287–1309.

E. Energy Use Analysis

The purpose of the energy use analysis is to determine the annual energy consumption of portable AC at different efficiencies in representative U.S. single-family homes, multi-family residences, and commercial settings, and to assess the energy savings potential of increased portable AC efficiency. The energy use analysis estimates the range of energy use of portable AC in the field (*i.e.,* as they are actually used by consumers). The energy use analysis provides the basis for other analyses DOE performed, particularly assessments of the energy savings and the savings in consumer operating costs that could result from adoption of amended or new standards.

DOE determined a range of annual energy consumption of portable ACs as a function of the unit's annual operating hours to meet the cooling demand, which depends on the efficiency of the unit, power (watts) of three modes of operation (cooling, fan, and standby), and the percentage of time in each mode. DOE also performed three sensitivity analyses on energy consumption, including looking at the effects of geographical distribution, room threshold size and overall operation time on consumer benefits and costs.

1. Consumer Samples

EIA's Residential Energy Consumption Survey (RECS) provides information on whether households use a room AC. Because portable ACs and room ACs often serve a similar function,[30] DOE developed a sample of households that use room ACs from RECS 2009, which is the latest available RECS.[31] DOE selected the subset of RECS 2009 records that met relevant criteria.[32]

AHAM commented that DOE's consumer sample based on room ACs does not geographically match results AHAM obtained through an online survey. (AHAM, No. 43 at p. 19) Although DOE has not received the full survey results from AHAM, DOE conducted a sensitivity analysis using data points estimated from Figure 6 in Appendix B of AHAM's comments. DOE reweighted its residential and commercial sample such that 24 percent of the sample was from the Northeast, 13 percent from the Midwest, 29 percent from the South, and 34 percent from the West. DOE found that this sensitivity marginally increased LCC savings and reduced the percent of negatively impacted consumers for both sectors. Results for this sensitivity can be found in the final rule TSD appendix 8F.

The California IOUs commented that DOE's estimate for its residential room size threshold of 1,000 square feet could be further refined using data from 2013 study by the National Association of Home Builders. The California IOUs suggested DOE's current method limits the sample of potential installations of portable ACs. (California IOUs, No. 42 at p. 4)

Sizing charts provided by vendors indicate that portable ACs are intended to cool rooms having an area as large as approximately 525 to 600 square feet. A review of retail websites, however, indicated portable ACs may be used in rooms as large as 1,000 square feet. DOE assumed 1,000 square feet to be the maximum room size a user would attempt to cool using a portable AC. In practice, only 60 records in the RECS 2009 sample (about 2 percent) represent rooms between 600 and 1,000 square feet.

As a sensitivity, DOE removed the room size threshold from its analysis and calculated LCC results using the full room AC sample. Removing this threshold made minimal impact on the results. In this scenario, the average LCC savings for residential consumers under the proposed standard (TSL 2) would be $107 (compared with $108 in the primary estimate), and 28 percent of consumers would be impacted negatively (compared with 27 percent in the primary estimate). The simple payback period would be 2.8 years (compared with 2.8 years in the primary estimate). The full sensitivity results can be found in the final rule TSD appendix 8F.

To estimate the operating hours of portable ACs used in commercial settings, DOE developed a building sample from the 2012 Commercial Buildings Energy Consumption Survey

[30] It is assumed that portable ACs may perform supplemental cooling to a particular space, but that the cooling loads between room ACs and portable ACs are similar. For example, a portable AC may be used to provide cooling to a single room in place of a central AC to cool an entire home. For the purposes of estimating energy use, DOE assumed that portable ACs are operated under similar cooling loads as room ACs, given their similar cooling capacities.

[31] DOE–EIA. *Residential Energy Consumption Survey*. 2009. *http://www.eia.gov/consumption/residential/data/2009/*.

[32] RECS household use criteria: (1) At least one room AC was present in the household; (2) The energy consumption of the room AC was greater than zero; (3) The capacity of the room AC was less than 14,000 Btu/hr (a cooling capacity comparable to portable ACs as measured by industry test methods); and (4) The room being cooled measured no more than 1,000 square feet.

(CBECS),[33] again using the operating hours of room ACs as a proxy. DOE used the 2003 CBECS in the June 2016 ECS NOPR analysis. The method is described in chapter 7 of the final rule TSD.

AHAM and the California IOUs encouraged DOE to replace 2003 CBECS data with 2012 CBECS data. (AHAM, No. 39 at pp. 85–87; California IOUs, No. 42 at p. 4)

DOE updates its inputs for analyses with credible and verifiable sources as data become available. At the time the June 2016 ECS NOPR analysis was completed, 2012 CBECS with expenditure microdata was not yet available, so DOE used 2003 CBECS. Because the data set was released in time for use in the final rule, DOE is using 2012 CBECS in its final rule analysis as recommended by AHAM and the California IOUs.

2. Cooling Mode Hours and Sensitivity Analyses

To estimate the cooling operating hours of portable ACs using datasets that are statistically representative, DOE used the same method and updated datasets that were used in the 2011 direct final rule for room ACs. 76 FR 22454 (Apr. 21, 2011). For each sample household, RECS provides the estimated energy use for cooling by room ACs. After assigning an efficiency and capacity to the room AC, DOE could then estimate its operating hours in cooling mode. DOE adjusted the operating hours in cooling mode to account for the likelihood that improvement in building shell efficiency would reduce the cooling load and operating hours.[34] The estimated average of cooling operating hours for a room AC is 612 hours/year.

Some interested parties objected to DOE's use of room AC data as a proxy for portable AC operating hours. AHAM stated that DOE misrepresents portable ACs by referencing and scaling characteristic and performance data from room air conditioners. (AHAM, No. 43 at p. 18) AHAM asserted that for a standards rule to be technologically feasible and economically justified, it must be based on product-specific data, not assumptions and estimates. (AHAM, No. 43 at pp. 1–2) De' Longhi stated that from their experience, while room ACs are typically used as the main cooling system, portable ACs are often used as supplementary systems when central systems are not activated or out of order so that the annual hours of use for portable ACs are lower than for room ACs. (De' Longhi, No. 41 at p. 1)

AHAM and De' Longhi stated that a De' Longhi survey [35] cannot be used to conclude that portable ACs and room ACs have similar cooling mode annual operating hours. De' Longhi asserted that although both portable ACs and room ACs are used in similar periods of the day, that does not mean that they are used for the same number of hours in a day and for the same number of days in a year. They believed that DOE mischaracterized the study and drew conclusions that are not justified from the data. De' Longhi stated that the annual hours of use for portable ACs are on average sensibly lower than for room ACs. (AHAM, No. 43 at pp. 18–19; De' Longhi, No. 41 at p. 2)

DOE maintains that room AC cooling hours are an appropriate proxy for portable AC cooling hours as both products are used for cooling defined spaces and their product usage is broadly similar. However, DOE agrees with the commenters that the De' Longhi survey cannot be used to conclusively draw a relationship between the total annual cooling mode hours of portable ACs and room ACs. To account for potential differences between consumer use of portable ACs and room ACs, DOE conducted a sensitivity analysis which assumes lower annual hours of use for portable ACs in comparison to room ACs. Specifically, in this sensitivity analysis, DOE scaled the room AC cooling mode hours of use by half while maintaining the assumption that portable ACs are used during the same time of year as room ACs, since the use of both types of cooling equipment is likely to be consistent seasonally. The results of this sensitivity analysis estimate one-third of the energy cost savings relative to the primary estimate. In this low-usage case, the average LCC savings under the adopted standards (TSL 2) would be $35 (compared with $125 in the primary estimate), and 42 percent of consumers would be impacted negatively (compared with 27 percent in the primary estimate). The simple payback period would be 5.1 years (compared with 2.8 years in the primary estimate). Further details are presented in appendix 8F and appendix 10E of the final rule TSD. Thus, even if consumers use portable ACs substantially less than room ACs, the overall impacts on consumers would be positive. It should be noted that lower product usage would imply a longer lifetime; however, in this sensitivity analysis, the lifetime was not lengthened. A longer lifetime would increase savings, reduce the payback period, and reduce the population segment that is negatively impacted.

AHAM recommended that DOE use data from the study by Burke *et al.* to calculate operating hours.[36] (AHAM, No. 43 at p. 20) DOE believes that it would be inaccurate to use the Burke *et al.* study for estimating operating hours for the nation. As stated in the report itself, given the limited number of test sites in two locations in the Northeast, the Burke *et al.* study was not intended to be statistically representative of portable AC users in the U.S. It should also be noted that the annual energy use estimates presented in the study are based on metered average outdoor temperatures which were reportedly lower than usual for most summers. In addition, the metering period began in July and it is likely that portable AC owners either in warmer years or in other areas of the country may operate the units in earlier months (May and June), which would contribute to higher annual use. DOE did use the Burke *et al.* study for estimations of the fan-only mode operation since the report provided the only publicly available fan-only information for any cooling product.

AHAM claims that the data DOE has used raise serious and separate concerns under the Data Quality Act.[37] (Public Law 106–554) According to AHAM, the law and the Office of Management and Budget (OMB) guidelines require agency actions aimed at ''maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by the agency.'' Id. at § 515(b)(2)(A). (AHAM, No. 43 at p. 20)

DOE maintains that the data sources and methodology used in its analyses meet the guidelines developed by OMB in response to the Data Quality Act. Data used in DOE's analysis draws from the best available statistically-significant representation of how U.S. consumers

[33] DOE–EIA. Commercial Buildings Energy Consumption Survey. 2012. *http://www.eia.gov/consumption/commercial/data/2012/.*

[34] To account for increased building efficiency at the time that the proposed standard would take effect, DOE used the 2022 building shell index factor of 0.97 for space cooling in all residences from the EIA's AEO. (Energy Information Administration. *Annual Energy Outlook 2016 with Projections to 2040.* July 2016.)

[35] De' Longhi Attachment to Comment on the Energy Efficiency and Renewable Energy Office (EERE) Proposed Rule: 2015–02–25 Energy Conservation Program: Test Procedures for Portable Air Conditioners; NOPR. May 8, 2015. *https://www.regulations.gov/document?D=EERE-2014-BT-TP-0014-0016.*

[36] Burke *et al.,* 2014. ''Using Field-Metered Data to Quantify Annual Energy Use of Residential Portable Air Conditioners.'' LBNL, Berkeley, CA. LBNL Report LBNL–6469E. September 2014.

[37] Reference can be found at *https://www.whitehouse.gov/sites/default/files/omb/fedreg/reproducible2.pdf.*

use cooling devices similar in function and cooling capacity to portable ACs. Interested parties have been provided opportunities at the preliminary analysis and NOPR stages to make data available to refine DOE's analysis. When reviewed and verified, DOE has incorporated data from comments into its analysis. For example, DOE incorporated analysis data and information from interested parties regarding historical shipments, and product efficiencies and capacities into the final rule. Additionally, DOE performed sensitivity analyses for inputs that are subject to uncertainty to assess the impact of alternative assumptions and reports those results in the final rule TSD.

The California IOUs suggested that DOE use projected cooling degree-days for the LCC analysis year (2022) to accurately quantify the required cooling load. (California IOUs, No. 42 at p. 4) DOE agrees and has incorporated this suggestion into its final rule analysis using census division cooling degree-day trends from *AEO 2016*.[38] Including cooling degree-day trends increases operating hours by approximately 4 percent. DOE also used the projected change in building shell efficiencies from *AEO 2016* when calculating operating hours to account for increased building shell efficiency of the stock.

3. Fan-Only Mode and Standby Mode Hours

To estimate the number of hours in fan-only mode, DOE utilized a field metering analysis of a sample of portable ACs in 19 homes.[39] The survey provided data on cooling-mode and fan-only mode hours of operation. DOE derived a distribution of the ratio of fan-only mode hours to cooling-mode hours, and used this distribution to randomly assign a ratio to each of the sample households, which allows estimation of fan-only mode hours of operation. DOE assumed portable ACs would only be plugged in during months with 5 or more cooling degree days. The annual hours in standby mode were derived by subtracting the cooling-mode and fan-only mode hours of operation from the total number of hours in a months with 5 or more cooling degree days.

Chapter 7 of the final rule TSD provides details on DOE's energy use analysis for portable ACs.

F. Life-Cycle Cost and Payback Period Analysis

DOE conducted LCC and PBP analyses to evaluate the economic impacts on individual consumers of potential energy conservation standards for portable ACs. The effect of new or amended energy conservation standards on individual consumers usually involves a reduction in operating cost and an increase in purchase cost. DOE used the following two metrics to measure consumer impacts:

- The LCC (life-cycle cost) is the total consumer expense of a product over the life of that product, consisting of total installed cost (manufacturer selling price, distribution chain markups, sales tax, and installation costs) plus operating costs (expenses for energy use, maintenance, and repair). To compute the operating costs, DOE discounts future operating costs to the time of purchase and sums them over the lifetime of the product.
- The simple PBP (payback period) is the estimated amount of time (in years) it takes consumers to recover the increased purchase cost (including installation) of a more-efficient product through lower operating costs. DOE calculates the simple PBP by dividing the change in purchase cost at higher ELs by the change in annual operating cost for the year that new standards are assumed to take effect.

For any given EL, DOE calculates the LCC savings as the change in LCC in a standards case relative to the LCC in the no-new-standards case, which reflects the estimated efficiency distribution of portable ACs in the absence of new or amended energy conservation standards. In contrast, the simple PBP for a given EL is measured relative to the baseline product.

For each considered EL, DOE calculated the LCC and PBP for a nationally representative set of housing units and commercial buildings that use portable ACs. DOE used the EIA's 2009 RECS to develop household samples for portable ACs based on households that use room ACs. DOE also used the EIA's 2012 CBECS to develop a sample of commercial buildings that use portable ACs, again based on buildings that use room ACs. For each sample household or commercial building, DOE determined the energy consumption for the portable ACs and the appropriate electricity price. By developing a representative sample of households, the analysis captured the variability in energy consumption and energy prices associated with the use of portable ACs.

Inputs to the calculation of total installed cost include the cost of the product—which includes MPCs, manufacturer markups, retailer and distributor markups, and sales taxes—and installation costs. Note in the case of portable ACs, DOE assumed that installation costs would not change with efficiency ELs. So the difference of installation cost between the baseline and higher ELs is then $0. Inputs to the calculation of operating expenses include annual energy consumption, energy prices and price projections, repair and maintenance costs, product lifetimes, and discount rates. DOE created distributions of values for product lifetime and discount rates with probabilities attached to each value, to account for their uncertainty and variability. Sales tax and electricity prices are tied to the geographic locations of purchasers drawn from the residential and commercial samples.

The model DOE uses to calculate the LCC and PBP relies on a Monte Carlo simulation to incorporate uncertainty and variability into the analysis. The Monte Carlo simulation randomly samples input values from the probability distributions and portable AC user samples. The model calculated the LCC and PBP for products at each EL for 10,000 housing units or commercial buildings per simulation run.

DOE calculated the LCC and PBP for all consumers as if each were to purchase a new product in the expected year of compliance with new standards. Any new standards would apply to portable ACs manufactured 5 years after publication of the final standard. (42 U.S.C. 6295(l)(2)) Therefore, for purposes of its analysis, DOE used 2022 as the first year of compliance with new standards.

Table IV.10 summarizes the approach and data DOE used to derive inputs to the LCC and PBP calculations. The subsections that follow provide further discussion. For energy use, RECS and CBECS were used for number of hours of use in cooling mode. A field metering report provided information regarding the fan-mode of portable ACs.[40] Details of the spreadsheet model, and of all the inputs to the LCC and PBP analyses, are contained in chapter 8 of the final rule TSD and its appendices.

[38] EIA's Annual Energy Outlook. (Energy Information Administration. Annual Energy Outlook 2016 with Projections to 2040. July 2016.)

[39] Burke, Thomas, et al. 2014. Using Field-Metered Data to Quantify Annual Energy Use of Portable Air Conditioners. *http://www.osti.gov/scitech/servlets/purl/1166989.*

[40] Burke, Thomas, et al. 2014. Using Field-Metered Data to Quantify Annual Energy Use of Portable Air Conditioners. *http://www.osti.gov/scitech/servlets/purl/1166989.*

TABLE IV.10—SUMMARY OF INPUTS AND METHODS FOR THE LCC AND PBP ANALYSIS *

Inputs	Source/method
Product Cost	Derived by multiplying MPCs by manufacturer and retailer markups and sales tax, as appropriate. Producer Price Index (PPI) series for small household electronics fit to an exponential model.
Installation Costs	Assumed no installation costs with baseline unit and no cost with EL.
Annual Energy Use	Power in each mode multiplied by the hours per year in each mode. Average number of hours based on 2009 RECS, 2012 CBECS, and field metering data. Variability: Based on the 2009 RECS and 2012 CBECS.
Energy Prices	Electricity: Based on 2014 average and marginal electricity price data from the Edison Electric Institute. Variability: Marginal electricity prices vary by season, U.S. region, and baseline electricity consumption level.
Energy Price Trends	Based on *AEO 2016 No-CPP case* price projections. Trends are dependent on sector and census division.
Repair and Maintenance Costs	Assumed no change with EL.
Product Lifetime	Weibull distribution using parameters from room ACs.
Discount Rates	Approach involves identifying all possible debt or asset classes that might be used to purchase the considered appliances, or might be affected indirectly. Primary data source was the Federal Reserve Board's Survey of Consumer Finances.
Compliance Date	2022.

* References for the data sources mentioned in this table are provided in the sections following the table or in chapter 8 of the final rule TSD.

1. Product Cost

To calculate consumer product costs, DOE multiplied the MPCs developed in the engineering analysis by the markups described in section IV.D of this document (along with sales taxes). DOE used different markups for baseline products and higher-efficiency products, because DOE applies an incremental markup to the increase in MSP associated with higher-efficiency products.

Economic literature and historical data suggest that the real costs of many products may trend downward over time according to ''learning'' or ''experience'' curves. Experience curve analysis implicitly includes factors such as efficiencies in labor, capital investment, automation, materials prices, distribution, and economies of scale at an industry-wide level.[41] DOE used the most representative Producer Price Index (PPI) series for portable ACs to fit to an exponential model to develop an experience curve. DOE obtained historical PPI data for ''small electric household appliances, except fans'' from the Labor Department's Bureau of Labor Statistics (BLS) for 1983 to 2015.[42] Although this PPI series encompasses more than portable ACs, no PPI data specific to portable ACs were available. The PPI data reflect nominal prices, adjusted for changes in product quality. DOE calculated an inflation-adjusted (deflated) price index by dividing the PPI series by the Gross Domestic Product Chained Price Index.

2. Installation Cost

Installation cost includes labor, overhead, and any miscellaneous materials and parts needed to install the product. Available evidence indicated that no installation costs would be incurred for baseline installation or be impacted with increased ELs.

3. Annual Energy Consumption

For each sampled household and building, DOE determined the energy consumption for a portable AC at different ELs using the approach described in section IV.E of this final rule.

4. Energy Prices

DOE used average prices (for baseline products) and marginal prices (for higher-efficiency products) which vary by season, region, and baseline electricity consumption level for the LCC. DOE estimated these prices using data published with the Edison Electric Institute (EEI) Typical Bills and Average Rates reports for summer and winter 2014.[43] For the residential sector each report provides, for most of the major IOUs in the country, the total bill assuming household consumption levels of 500, 750, and 1,000 kWh for the billing period. For the commercial sector the report provides typical bills for several combinations of monthly electricity peak demand and total consumption.

For both the residential and commercial sectors, DOE defined the average price as the ratio of the total bill to the total electricity consumption. For the residential sector, DOE used the EEI data to also define a marginal price as the ratio of the change in the bill to the change in energy consumption. For the commercial sector, marginal prices cannot be estimated directly from the EEI data, so DOE used a different approach, as described in chapter 8 of the final rule TSD.

Regionally weighted-average values for each type of price were calculated for the nine census divisions and four large states (CA, FL, NY and TX). Each EEI utility in a division was assigned a weight based on the number of consumers it serves. Consumer counts were taken from the most recent EIA Form 861 data (2012).[44] DOE adjusted these regional weighted-average prices to account for systematic differences between IOUs and publicly-owned utilities, as the latter are not included in the EEI data set.

DOE assigned seasonal average and marginal prices to each household or commercial building in the LCC sample based on its location and its baseline monthly electricity consumption for an average summer or winter month. For a detailed discussion of the development

[41] Taylor, M. and Fujita, K.S. Accounting for Technological Change in Regulatory Impact Analyses: *The Learning Curve Technique*. LBNL–6195E. LBNL, Berkeley, CA. April 2013. *http://escholarship.org/uc/item/3c8709p4#page-1*.

[42] U.S. Department of Labor BLS. Producer Price Index for 1983–2013. PPI series ID: PCU33521033521014. (Last accessed September 8, 2014.) *http://www.bls.gov/ppi/*.

[43] EEI. *Typical Bills and Average Rates Report*. Winter 2014 published April 2014, Summer 2014 published October 2014. See *http://www.eei.org/resourcesandmedia/products/Pages/Products.aspx*.

[44] DOE–EIA. Form EIA–861 Annual Electric Power Industry Database. *http://www.eia.doe.gov/cneaf/electricity/page/eia861.html*.

of electricity prices, see appendix 8C of the final rule TSD.

To estimate future prices, DOE used the projected annual changes in average residential and commercial electricity prices that are consistent with cases described on p. E–8 in *AEO 2016*.[45] *AEO 2016* has an end year of 2040. The *AEO* price trends do not distinguish between marginal and average prices, so DOE used the same trends for both. DOE reviewed the EEI data for the years 2007 to 2014 and determined that there is no systematic difference in the trends for marginal vs. average prices in the data.

5. Maintenance and Repair Costs

Repair costs are associated with repairing or replacing product components that have failed in an appliance. Maintenance costs are associated with maintaining the operation of the product. Based on available data and low product purchase prices, DOE concluded that repair frequencies are low and do not increase for higher-capacity or higher-efficiency units. DOE assumed a zero cost for all ELs.

AHAM commented that higher ELs may require use of variable-speed compressors to meet a potential standard and this would impact the repair rate and cost of higher ELs. (AHAM, No. 43 at pp. 25–26) AHAM was unable to provide data to show that variable-speed compressors would require an increased repair rate or cost, but suggested DOE consult with manufacturers. DOE has not found any evidence that repair rates or costs would increase with efficiency for portable ACs nor did any manufacturer provide data to suggest this occurs in the market today. Therefore, DOE estimates that portable AC repair rates and costs do not change with higher efficiency units.

6. Product Lifetime

The product lifetime is the age at which the product is retired from service. Given similar mechanical components and uses, DOE considered that the lifetime distribution of portable ACs is the same as that of room ACs, as estimated for the 2011 direct final rule. 76 FR 22454 (April 21, 2011). The average lifetime is 10.5 years.

AHAM also noted that although room ACs and portable ACs are used for similar purposes, they are different products and therefore they may have different lifetimes. (AHAM, No. 39 at p. 96) AHAM commented that DOE should use an average product lifetime of 7 years for portable ACs and referenced a 2010 survey conducted by AHAM. (AHAM, No. 43 at pp. 23–24)

AHAM did not provide the survey in its comments and DOE is unable to locate a copy of the survey in the public record; therefore, DOE is unable to verify AHAM's estimate and determine whether the lifetime estimate is specifically for portable ACs or for a similar product. Additionally, if AHAM's estimate is for the portable AC product, it is unclear how a 2010 survey could accurately measure the average lifetime for a product that has only been available in large residential markets since the early 2000s. An accurate calculation of the average lifetime requires at least one full turnover of stock to sample the entire age distribution to include the longest living units that exceed the average lifetime. Assuming the first appreciable number of shipments of portable ACs occurred in 2000, the oldest possible lifetime captured in AHAM's survey would be 10 years. Excluding longer lived portable ACs that have not yet failed would bias an estimate of the average to lower values. Without the details of the survey methodology, DOE is unable to include AHAM's estimate in derivation of a lifetime distribution.

ASAP stated that using the lifetime of room ACs or dehumidifiers is reasonable, given the similarities of the products and the components that make up those products. (ASAP, No. 39 at pp. 98–99) The Joint Commenters noted that portable dehumidifiers are very similar to portable ACs, as the two products share the same basic refrigeration system components and are both portable units placed inside a room. The Joint Commenters also noted that DOE estimates the average lifetime of a portable dehumidifier (11 years) is slightly longer than the average lifetime of a room AC (10.5 years) and therefore, DOE's assumption for the average lifetime of portable ACs may be conservative. (Joint Commenters, No. 44 at p. 6) DOE continues to use an average lifetime of 10.5 years derived from room ACs given the similarity in their components.

Chapter 8 of the final rule TSD provides details on DOE's development of lifetimes for portable ACs.

7. Discount Rates

In the calculation of LCC, DOE applies discount rates appropriate to households to estimate the present value of future operating costs. DOE estimated a distribution of residential discount rates for portable ACs based on consumer financing costs and the opportunity cost of consumer funds.

DOE applies weighted average discount rates calculated from consumer debt and asset data, rather than marginal or implicit discount rates.[46] DOE notes that the LCC does not analyze the appliance purchase decision, so the implicit discount rate is not relevant in this model. The LCC estimates NPV over the lifetime of the product, so the appropriate discount rate will reflect the general opportunity cost of household funds, taking this time scale into account. Given the long time horizon modeled in the LCC, the application of a marginal interest rate associated with an initial source of funds is inaccurate. Regardless of the method of purchase, consumers are expected to continue to rebalance their debt and asset holdings over the LCC analysis period, based on the restrictions consumers face in their debt payment requirements and the relative size of the interest rates available on debts and assets. DOE estimates the aggregate impact of this rebalancing using the historical distribution of debts and assets.

To establish residential discount rates for the LCC analysis, DOE identified all relevant household debt or asset classes in order to approximate a consumer's opportunity cost of funds related to appliance energy cost savings. DOE estimated the average percentage shares of the various types of debt and equity by household income group using data from the Federal Reserve Board's Survey of Consumer Finances[47] (SCF) for 1995, 1998, 2001, 2004, 2007, 2010, and 2013. Using the SCF and other sources, DOE developed a distribution of rates for each type of debt and asset by income group to represent the rates that may

[45] EIA. *Annual Energy Outlook 2016 with Projections to 2040.* Washington, DC. Available at *www.eia.gov/forecasts/aeo/*. The standards finalized in this rulemaking will take effect a few years prior to the 2022 commencement of the Clean Power Plan compliance requirements. As DOE has not modeled the effect of CPP during the 30-year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. These energy efficiency standards are expected to put downward pressure on energy prices relative to the projections in the *AEO 2016* case that incorporates the CPP. Consequently, DOE used the electricity price projections found in the *AEO 2016* No-CPP case as these electricity price projections are expected to be lower, yielding more conservative estimates for consumer savings due to the energy efficiency standards.

[46] The implicit discount rate is inferred from a consumer purchase decision between two otherwise identical goods with different first cost and operating cost. It is the interest rate that equates the increment of first cost to the difference in net present value of lifetime operating cost, incorporating the influence of several factors: Transaction costs; risk premiums and response to uncertainty; time preferences; interest rates at which a consumer is able to borrow or lend.

[47] The Federal Reserve Board, SCF 1995, 1998, 2001, 2004, 2007, 2010, 2013. *http://www.federalreserve.gov/pubs/oss/oss2/scfindex.html.*

apply in the year in which new or amended standards would take effect. DOE assigned each sample household a specific discount rate drawn from one of the distributions. The average rate across all types of household debt and equity and income groups, weighted by the shares of each type, is 4.5 percent. See chapter 8 of the final rule TSD for further details on the development of consumer discount rates.

To establish commercial discount rates for the LCC analysis, DOE estimated the cost of capital for companies that purchase a portable AC. The weighted average cost of capital is commonly used to estimate the present value of cash flows to be derived from a typical company project or investment. Most companies use both debt and equity capital to fund investments, so their cost of capital is the weighted average of the cost to the firm of equity and debt financing as estimated from financial data for publicly traded firms in the sectors that purchase computers. For this analysis, DOE used Damadoran Online [48] as the source of information about company debt and equity financing. The average rate across all types of companies, weighted by the shares of each type, is 5.6 percent. See chapter 8 of the NOPR TSD for further details on the development of commercial discount rates.

AHAM commented that DOE has traditionally used a real (inflation adjusted) discount rate in the LCC calculation based on averaging the various components of debt and assets. AHAM noted that AHAM and others have commented that an average consumer discount rate is inappropriate and that DOE should use a marginal rate based on the cost of available borrowed funds, generally credit card debt. (AHAM, No. 43 at p. 24) In response to questions by AHAM, DOE stated in the DOE response memo and maintains that when assessing the NPV of an investment in energy efficiency, the marginal interest rate alone (assuming it were the interest rate on the credit card used to make the purchase, for example) would only be the relevant discount rate if either: (1) The consumer were restricted from rebalancing their debt and asset holdings (by redistributing debt and assets based on the relative interest rates available) over the entire time period modeled in the LCC analysis; or (2) the risk associated with an investment in energy efficiency was at a level commensurate with that reflected by credit card interest rates (*i.e.,* that the risk premium required for an investment in energy efficiency was very high).[49]

In reference to the first point, rebalancing, AHAM commented that the inherent assumption allowing rebalancing is that consumers will defer consumption (*i.e.,* save) in order to generate surplus cash which can then be used to pay down debt. AHAM stated that this assumption is essential since consumers have no other source of investment capital other than savings (*e.g.,* individuals cannot sell ''equity'' in themselves). In this case, AHAM suggested that the appropriate discount rate would be the implied rate of return for deferring consumption. AHAM noted that academic studies on implicit discount rates for the consumption/savings tradeoff yield discount rates substantially higher than either the 4.43 percent assumed by DOE or the 11.6 percent recommended by AHAM.[50] AHAM noted that it would be pleased if DOE adopted a consumer discount rate based on the consumption/savings tradeoff. (AHAM, No. 43 at pp. 24–25)

DOE believes that using an average discount rate in the LCC best approximates the actual opportunity cost of funds faced by consumers. This opportunity cost of funds is the time-value of money for consumers. Interest rates, which are set by supply and demand for credit and capital in the financial market, vary across consumers and across financial investment or credit source based on the risk associated with that consumer or with that investment type. Because the purpose of the LCC analysis is to determine the distributional impacts of the proposed standard across heterogeneous consumers in the population, to account for variation in access to rates of return on investments and interest rates of debt faced by consumers in the population, DOE generates a discount rates based on the average of the interest rates associated with debts and assets holdings, weighted by the share of funds associates with each of those debts or assets in the portfolio. This is the best approximation of the actual opportunity cost of funds for each household,[51] and it is the value of deferred consumption as determined by the equilibrium of supply and demand in the financial market. Those with very high rates of discounting for deferred consumption will hold more debt, potentially at higher rates of interest. Those with lower rates will hold less. This is captured in the weighted average calculation of the discount rate used by DOE. Additionally, DOE disagrees with the statement that consumers have no other source of investment capital other than savings. A range of assets is included in the weighted average discount rate calculated by DOE precisely because that is the equity that consumers may hold. In particular, they can either defer putting additional funds towards one of these investments or they can extract equity from one of these investments if they are able. These financial assets are a part of the opportunity cost of funds held by consumers, and that is why they are in the weighted average calculation for the discount rate use by DOE.

In reference to the second point concerning risk, AHAM stated DOE is carrying the concepts of capital asset pricing (CAPM) used in the commercial sector (and used by DOE to set commercial discount rates), which, essentially, assumes that the cost of equity is set in relationship to a risk free rate and the systemic variance between a security (or set of cash flows) and a widely diversified set of equities. AHAM commented that DOE, in discussing point (2), focuses on ''risk premiums'' associated with types of investments. Within the context of the CAPM model, AHAM stated that all the risks discussed by DOE are diversifiable, non-systemic risk. AHAM suggested that they should be incorporated (and are incorporated by the DOE Monte Carlo process) in the cash flow

[48] Damodaran, A. *Cost of Capital by Sector.* January 2014. New York, NY. *http://people.stern.nyu.edu/adamodar/New_Home_Page/datafile/wacc.htm.*

[49] The DOE response memo, ''Memo_AHAM Request for Info on PACs_2016–08–19'' can be found at *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0033-0038.*

[50] AHAM noted, for example, Song Yao, Carl F. Mela, Jeongwen Chiang and Yuxin Chen (''Determining Consumers' Discount Rates With Field Studies,'' Journal of Marketing Research, 30, 3 (May–June), 447–468.) found a weekly discount factor of .86–.91 (9.8–16.2% interest rate) for deferred consumption in empirical consumer research and Jean-Pierre Dube, Gunter J. Hitsch and Pranav Jindal (''The joint identification of utility and discount functions from stated choice data: An application to durable goods adoption'', Quant Mark Econ (2014) 12:331–377) found a consumer discount rate of 43% for deferred consumption.

[51] One of the academic papers cited by AHAM in their comment deals with a product purchase decision, which is not the context of the LCC model because the LCC does not model purchase decisions. *See* Dubé, J. P., Hitsch, G. J., & Jindal, P. (2014). The joint identification of utility and discount functions from stated choice data: An application to durable goods adoption. *Quantitative Marketing and Economics, 12*(4), 331–377. The other paper cited by AHAM is work done in a setting that is very different from that relevant to the LCC analysis. It is based on data from Chinese consumer behavior on a cell phone plan that changes from a flat per-minute rate to two-part tariff.. *See* Yao, S., Mela, C. F., Chiang, J., & Chen, Y. (2012). Determining consumers' discount rates with field studies. *Journal of Marketing Research, 49*(6), 822–841.

assessment. AHAM commented that this whole discussion on point (2) is irrelevant to a discussion of appropriate discount rates. (AHAM, No. 43 at p. 25)

First, DOE raised the issue of risk not in the context of its method but rather to explain circumstances in which a higher discount rate might be appropriate. In any case, DOE disagrees that the discussion regarding the risk premium appropriate for an investment in energy efficiency is irrelevant to the choice of discount rate used in the LCC. As DOE stated before, while there is limited data available on the risk associated with specific types of energy efficiency investments, Mills et al. (2006) present results from an analysis demonstrating that the risk associated with the returns from investing in an ENERGY STAR Building are in line with that of long-term government bonds (*i.e.,* quite low). These results are shown in Figure IV.3, below. This is suggestive that there is no reason to assume that the risk premium required for an investment in energy efficiency should be particularly high, and certainly not high enough to justify a required rate of return at a level commensurate with a credit card interest rate.

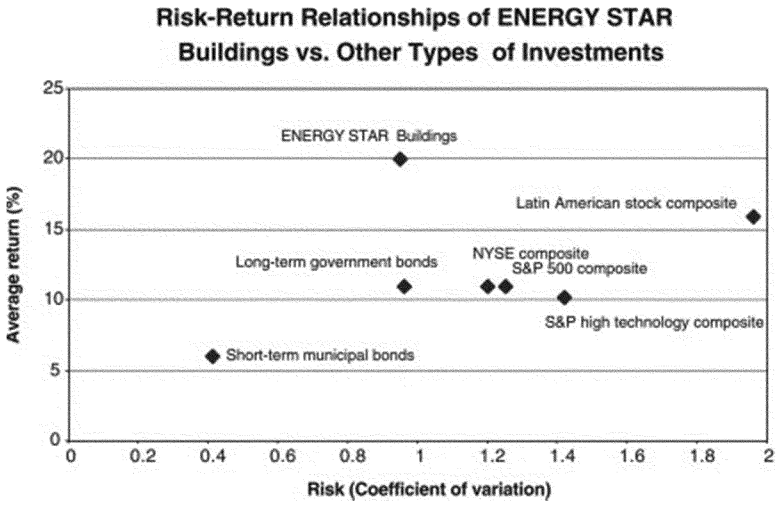

Figure IV.3 Risk-Return Relationship of ENERGY STAR Buildings vs. Other Types of Investments.[52]

AHAMstated that the actual question would be what discount rate consumers use to evaluate investments and should that discount rate be some theoretical value (consumers ''ought'' to look at investments in some manner) or a factual value. AHAM commented that the factual value, or imputed, discount rate for energy or any other investment is substantially greater than four percent, inflation adjusted. AHAM concluded that DOE should either use the short-term marginal cost of funds for consumers, the actual rate used to finance most significant purchases, or it should use a rate to reflect the time value in deferring consumption in the consumption versus saving tradeoff. AHAM noted that either rate is substantially higher than the 4.43 percent used by DOE. (AHAM, No. 43 at p. 25)

As DOE has responded in the past to comments on this topic, the LCC analysis is not modeling a purchase decision. The LCC analysis estimates the NPV of financial trade-offs of increased upfront product costs weighed against reduced operating costs over the lifetime of the covered product, assuming the product has already been obtained and installed. Implicit or ''imputed'' discount rates referred to by AHAM are not the appropriate rates to use in the context of the LCC analysis because such rates deviate from market interest rates due to a variety of factors (*e.g.,* imperfect information, option values, transaction costs, cognitive biases such as present-based preferences or loss aversion, etc.). All of these factors are irrelevant from the perspective of the LCC analysis; they are already sunk costs. The short-term marginal rate is not the appropriate discount rate to use because fixing the discount rate at the marginal rate associated with a credit card assumes that consumers purchase the appliance with a credit card, and keep that purchase on the credit card throughout the entire time it takes to pay off that debt with only operating costs savings from the more efficient product. There is little evidence that consumers behave in this way.

8. Energy Efficiency Distribution in the No-New-Standards Case

To accurately estimate the share of consumers that would be affected by a potential energy conservation standard at a particular EL, DOE's LCC analysis considered the projected distribution (market shares) of product efficiencies under the no-new-standards case (*i.e.,* the case without new energy conservation standards).

To estimate the energy efficiency distribution of portable ACs for 2022, DOE's LCC analysis considered the projected distribution (market shares) of product efficiencies under the no-new-standards case (*i.e.,* the case without new energy conservation standards). Based on the engineering analysis, DOE found that gains in efficiency were achieved by utilizing more efficient components in existing test units. DOE used product component characteristics to estimate the current efficiency distribution of portable ACs on the market. DOE based EL 1, EL2, and EL 3 on the performance observed in its test sample used to develop the engineering analysis. Therefore, DOE estimated a share of 37 percent at the baseline, 48 percent for EL 1, 13 percent for EL 2, 2.2

[52] Mills, E., Kromer, S., Weiss, G. and Mathew, P.A., 2006. From volatility to value: Analyzing and managing financial and performance risk in energy savings projects. *Energy Policy, 34*(2), pp.188–199.

percent for EL 3, and no share at EL 4. EL 4 represents the maximum theoretical performance based on modeling the max-tech design options. The estimated market shares for the no-new-standards case for portable ACs and the average EER and CEER values for each EL are shown in Table IV.11. See chapter 8 of the final rule TSD for further information on the derivation of the efficiency distributions.

TABLE IV.11—PORTABLE AIR CONDITIONER NO-NEW-STANDARDS CASE EFFICIENCY DISTRIBUTION

Efficiency level	EER	CEER	Market share (%)
Baseline	5.35	5.08	37
1	6.05	5.94	47.8
2	7.15	7.13	13
3	8.48	8.46	2.2
4	10.75	10.73	0

9. Payback Period Analysis

The simple PBP is the amount of time it takes the consumer to recover the additional installed cost of more-efficient products, compared to baseline products, through energy cost savings. PBPs are expressed in years. PBPs that exceed the life of the product mean that the increased total installed cost is not recovered in reduced operating expenses.

The inputs to the simple PBP calculation for each EL are the change in total installed cost of the product and the change in the first-year annual operating expenditures relative to the baseline. The PBP calculation uses the same inputs as the LCC analysis, except that discount rates are not applied.

As noted above, EPCA, as amended, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii)) For each considered EL, DOE determined the value of the first year's energy savings by calculating the energy savings in accordance with the applicable DOE test procedure, and multiplying those savings by the average energy price projection for the year in which compliance with the new standards would be required (see section V.B.1.c of this final rule).

G. Shipments Analysis

DOE uses projections of annual product shipments to calculate the national impacts of potential amended or new energy conservation standards on energy use, NPV, and future manufacturer cash flows.[53] The shipments model takes an accounting approach, tracking market shares of each product class and the vintage of units in the stock. Stock accounting uses product shipments as inputs to estimate the age distribution of in-service product stocks for all years. The age distribution of in-service product stocks is a key input to calculations of both the NES and NPV, because operating costs for any year depend on the age distribution of the stock.

DOE received data on portable AC shipments in 2014 from manufacturer interviews. The manufacturer interviews also provided information which suggested that the average annual growth in portable AC shipments between 2004 and 2013 was 30 percent. To estimate historical shipments prior to 2004, DOE interpolated between 1985 (the date that portable ACs were introduced to the residential market) and 2004.

DOE estimated a saturation rate to project shipments of portable ACs. DOE assumed that the portable AC saturation rate would be no greater than half the current room AC saturation rate (based on RECS 2009) by the end of the analysis period, *i.e.,* 2051. For each year of the projection period, the saturation rate of portable ACs was determined from a combination of the total stock of the product and total housing stock. The total stock of portable ACs was based on product lifetime and the survival function developed in the LCC analysis. DOE used total housing stock from *AEO 2016.* Based on this revised approach, DOE estimated that the shipments of portable ACs would increase from 1.32 million in 2014 to 1.67 million in 2051.

For the final rule analysis, DOE applied price and efficiency elasticity parameters to estimate the effect of new standards on portable AC shipments. DOE estimated the price and efficiency elasticity parameters from a regression analysis that incorporated shipments, purchase price, and efficiency data specific to several residential appliances during 1989–2009. Based on evidence that the price elasticity of demand is significantly different over the short run and long run for other consumer goods (*i.e.,* automobiles), DOE assumed that these elasticities decline over time. DOE estimated shipments in each standards case using the price and efficiency elasticity along with the change in the product price and operating costs between a standards case and the no-new-standards case.

AHAM commented that it believes that DOE has under-estimated the price/feature elasticity effects on portable ACs. AHAM stated that DOE has used a generic elasticity factor without looking at the specific conditions of the portable AC marketplace and that importers who purchase portable ACs and name-brand report that they are in this business because of retailer demand for a full product line. AHAM notes that if manufacturers are forced to recalibrate cooling capacity and increase size and weight, the dynamic of the portable AC market will diminish, with retailers ceasing to require portable ACs as part of a perceived full-line of products and leading to a negative impact on shipments. As such, AHAM recommended that DOE conduct sensitivity analyses on energy saved and on manufacturer impact based on a 15 percent and a 30 percent decline in shipments from the 1.32 million unit base case. (AHAM, No. 43 at p. 26)

AHAM's suggestion of a 15 percent or 30 percent decline in shipments does not appear to be based on any data source. At TSL 2, a 15 percent decline in shipments implies a price elasticity of −1.7. A 30 percent decline implies a price elasticity of −3.4 which is significantly smaller (*i.e.,* more elastic) than any good found in the literature review. A literature review of typical price elasticity values performed by Fujita[54] finds a range between −0.14

[53] DOE uses data on manufacturer shipments as a proxy for national sales, as aggregate data on sales are lacking. In general, one would expect a close correspondence between shipments and sales.

[54] Fujita, K.S. Estimating Price Elasticity using Market-Level Appliance Data. 2015 *http://eetd.lbl.gov/sites/all/files/lbnl-188289.pdf.*

and −0.42 for appliances. The value used by DOE, −0.45, exceeds the high end of the range, which suggests that it is reasonable to apply to portable ACs. The concern raised by AHAM that retailers may cease to carry portable ACs is unlikely to come to pass because the adopted standards would not necessarily significantly increase size and weight, and furthermore portable ACs occupy a unique market niche.

AHAM commented that the decline in shipments from the no-new-standards case should not count as a beneficial reduction in energy consumption. While the use of energy by portable ACs will decline when fewer of them are bought, AHAM stated that this is not a net national benefit. Rather, AHAM noted that the loss of consumer utility and the decline in consumer purchases of a product are the sort of results that the EPCA statute specifically prohibits when it leads to a product or a set of product features being withdrawn from the market. AHAM commented that in the case of portable ACs, the cost will increase and product features will worsen, if not disappear, leading to fewer portable ACs being purchased. AHAM suggested that DOE should specifically exclude the effects of energy savings from its energy reduction calculations in the NIA. (AHAM, No. 43 at p. 28–29)

DOE agrees that the energy savings and the NPV should reflect shipments from only the affected stock (*i.e.,* shipments impacted by a standard) and has calculated the energy savings and the NPV accordingly.

For details on the shipments analysis, see chapter 9 of the final rule TSD for further information.

H. National Impact Analysis

The NIA assesses the NES and the NPV from a national perspective of total consumer costs and savings that would be expected to result from new or amended standards at specific ELs.[55] (''Consumer'' in this context refers to consumers of the product being regulated.) DOE calculates the NES and NPV for the potential standard levels considered based on projections of annual product shipments, along with the annual energy consumption and total installed cost data from the energy use and LCC analyses. For the present analysis, DOE projected the energy savings, operating cost savings, product costs, and NPV of consumer benefits over the lifetime of portable ACs sold from 2022 through 2051.

DOE evaluates the impacts of new standards by comparing a case without such standards with standards-case projections. The no-new-standards case characterizes energy use and consumer costs for each product class in the absence of new or amended energy conservation standards. For this projection, DOE considers historical trends in efficiency and various forces that are likely to affect the mix of efficiencies over time. DOE compares the no-new-standards case with projections characterizing the market if DOE adopted new standards at specific energy ELs (*i.e.,* the TSLs or standards cases) for that class. For the standards cases, DOE considers how a given standard would likely affect the market shares of products with efficiencies greater than the standard.

Higher-efficiency portable ACs reduce the operating costs for a consumer, which can lead to greater use of the product. A direct rebound effect occurs when a product that is made more efficient is used more intensively, such that the expected energy savings from the efficiency improvement may not fully materialize. DOE examined a 2009 review of empirical estimates of the rebound effect for various energy-using products.[56] 80 FR 13120, 13148. This review concluded that the econometric and quasi-experimental studies suggest a mean value for the direct rebound effect for household heating of around 20 percent. DOE also examined a 2012 ACEEE paper[57] and a 2013 paper by Thomas and Azevedo.[58] Both of these publications examined the same studies that were reviewed by Sorrell, as well as Greening et al.,[59] and identified methodological problems with some of the studies. The studies, believed to be most reliable by Thomas and Azevedo, show a direct rebound effect for space conditioning products in the 1-percent to 15-percent range, while Nadel concludes that a more likely range is 1 to 12 percent, with rebound effects sometimes higher than this range for low-income households who could not afford to adequately heat their homes prior to weatherization. Based on DOE's review of these recent assessments (see chapter 10 of the final rule TSD), DOE used a 15 percent rebound effect for this final rule.

DOE uses a spreadsheet model to calculate the energy savings and the national consumer costs and savings from each TSL. Interested parties can review DOE's analyses by changing various input quantities within the spreadsheet at *https://www.regulations.gov/docket?D=EERE-2013-BT-STD-0033.* The NIA spreadsheet model uses typical values (as opposed to probability distributions) as inputs.

Table IV.12 summarizes the inputs and methods DOE used for the NIA analysis for the final rule. Discussion of these inputs and methods follows the table. See chapter 10 of the final rule TSD for further details.

TABLE IV.12—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS

Inputs	Method
Shipments	Annual shipments from shipments model.
Compliance Date of Standard	2022.
Efficiency Trends	*No-New-Standards case:* Annual increase in efficiency of 0.25 percent between 2022 and 2051. *Standards cases:* Roll-up plus shift scenario.
Annual Energy Consumption per Unit	Annual weighted-average values are a function of energy use at each TSL.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each TSL. Incorporates projection of future product prices based on historical data.

[55] The NIA accounts for impacts in the 50 states and U.S. territories.

[56] Steven Sorrell, et al, Empirical Estimates of the Direct Rebound Effect: A Review, 37 Energy Policy 1356–71 (2009).

[57] Steven Nadel, ''The Rebound Effect: Large or Small?'' ACEEE White Paper (August 2012) (Available at: *www.aceee.org/white-paper/reboundeffect-large-or-small*).

[58] Brinda Thomas & Ines Azevedo, Estimating Direct and Indirect Rebound Effects for U.S. Households with Input–Output Analysis, Part 1: Theoretical Framework, 86 Ecological Econ. 199–201 (2013), available at *www.sciencedirect.com/science/article/pii/S0921800912004764.*

[59] 65 Lorna A. Greening, et al., Energy Efficiency and Consumption—The Rebound Effect—A Survey, 28 Energy Policy 389–401 (2002).

TABLE IV.12—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS—Continued

Inputs	Method
Annual Energy Cost per Unit	Annual weighted-average values as a function of the annual energy consumption per unit and energy prices.
Repair and Maintenance Cost per Unit	Annual values do not change with EL.
Energy Prices and Price Trends	Average and marginal electricity prices for residential and commercial sectors from life-cycle cost and payback period analysis. *AEO 2016* no-CPP case price projections (to 2040) and extrapolation through 2051.
Energy Site-to-Primary and FFC Conversion	A time-series conversion factor based on *AEO 2016.*
Discount Rate	Three and seven percent.
Present Year	2016.

1. Product Efficiency Trends

A key component of the NIA is the trend in energy efficiency projected for the no-new-standards case and each of the standards cases. Section IV.F.8 of this document describes how DOE developed an energy efficiency distribution for the no-new-standards case (which yields a shipment-weighted average efficiency) for each of the considered product classes for the year of anticipated compliance with an amended or new standard. To project the trend in efficiency absent new standards for portable ACs over the entire shipments projection period, DOE used as a starting point the shipments-weighted cooling energy efficiency ratio (SWEER) estimated for 2022 in the LCC analysis and assumed an annual increase in efficiency equal to the increase estimated for room ACs in the 2011 direct final rule: 0.25 percent between 2022 and 2051. 76 FR 22454 (April 21, 2011). The approach is further described in chapter 10 of the final rule TSD.

For the standards cases, DOE used a ''roll-up'' scenario to establish the shipment-weighted efficiency for the year that standards are assumed to become effective (2022). In this scenario, the market of products in the no-new-standards case that do not meet the standard under consideration would ''roll up'' to meet the new standard level, and the market share of products above the standard would remain unchanged.

To develop standards case efficiency trends after 2022, DOE developed SWEER growth trends for each standard level that maintained, throughout the analysis period (2022–2051), the same difference in per-unit average cost as was determined between the no-new-standards case and each standards case in 2022. The approach is further described in chapter 10 of the final rule TSD.

2. National Energy Savings

The NES analysis involves a comparison of national energy consumption of the considered products between each potential standards case (TSL) and the case with no new or amended energy conservation standards. DOE calculated the annual NES by multiplying the number of units (stock) of each product (by vintage or age) by the annual energy consumption savings per unit (also by vintage). DOE calculated unit annual energy consumption savings based on the difference in unit annual energy consumption for the no-new-standards case and for each higher efficiency standard case. DOE estimated energy consumption and savings based on site energy and converted the electricity consumption and savings to primary energy (*i.e.,* the energy consumed by power plants to generate site electricity) using annual conversion factors derived from *AEO 2016.* Cumulative energy savings are the sum of the NES for each year over the timeframe of the analysis.

In 2011, in response to the recommendations of a committee on ''Point-of-Use and Full-Fuel-Cycle Measurement Approaches to Energy Efficiency Standards'' appointed by the National Academy of Sciences, DOE announced its intention to use full-fuel-cycle (FFC) measures of energy use and GHG and other emissions in the NIA and emissions analyses included in future energy conservation standards rulemakings. 76 FR 51281 (Aug. 18, 2011). After evaluating the approaches discussed in the August 18, 2011 notice, DOE published a statement of amended policy in which DOE explained its determination that EIA's National Energy Modeling System (NEMS) is the most appropriate tool for its FFC analysis and its intention to use NEMS for that purpose. 77 FR 49701 (Aug. 17, 2012). NEMS is a public domain, multi-sector, partial equilibrium model of the U.S. energy sector [60] that EIA uses to prepare its *AEO.* The FFC factors incorporate losses in production and delivery in the case of natural gas (including fugitive emissions) and additional energy used to produce and deliver the various fuels used by power plants. The approach used for deriving FFC measures of energy use and emissions is described in appendix 10B of the final rule TSD.

3. Net Present Value Analysis

The inputs for determining the NPV of the total costs and benefits experienced by consumers are (1) total annual installed cost, (2) total annual operating costs (energy costs and repair and maintenance costs), and (3) a discount factor to calculate the present value of costs and savings. DOE calculates net savings each year as the difference between the no-new-standards case and each standards case in terms of total savings in operating costs versus total increases in installed costs. DOE calculates operating cost savings over the lifetime of each product shipped during the projection period.

As discussed in section IV.F.1 of this document, DOE developed portable AC price trends based on historical PPI data. DOE applied the same trends to project prices at each considered EL. By 2051, which is the end date of the projection period, the average portable AC price is projected to drop 53 percent relative to 2013. DOE's projection of product prices is described in appendix 10C of the final rule TSD.

To evaluate the effect of uncertainty regarding the price trend estimates, DOE investigated the impact of different product price projections on the consumer NPV for the considered TSLs for portable ACs. In addition to the default price trend, DOE considered two product price sensitivity cases: (1) A

[60] For more information on NEMS, refer to *The National Energy Modeling System: An Overview 2009,* DOE/EIA–0581 (2009), October 2009. Available at *http://www.eia.gov/forecasts/aeo/index.cfm.*

high price decline case based on the *AEO 2016* deflator for ''furniture and appliances''; and (2) a low price decline case based on BLS' inflation-adjusted PPI for small electric household appliances spanning 1998–2015. The derivation of these price trends and the results of these sensitivity cases are described in appendix 10C of the final rule TSD.

The operating cost savings are energy cost savings, which are calculated using the estimated energy savings in each year and the projected price of the appropriate form of energy. To estimate energy prices in future years, DOE multiplied the average electricity prices by the projection of annual national-average residential and commercial electricity price changes in the Reference case described on p. E–8 in *AEO 2016.*[61] *AEO 2016* has an end year of 2040. To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2030 to 2040. As part of the NIA, DOE also analyzed scenarios that used inputs from the *AEO 2016* Low Economic Growth and High Economic Growth cases. Those cases have higher and lower energy price trends compared to the Reference case. NIA results based on these cases are presented in appendix 10C of the final rule TSD.

In calculating the NPV, DOE multiplies the net savings in future years by a discount factor to determine their present value. For this final rule, DOE estimated the NPV of consumer benefits using both a 3-percent and a 7-percent real discount rate. DOE uses these discount rates in accordance with guidance provided by OMB to Federal agencies on the development of regulatory analysis.[62] The discount rates for the determination of NPV are in contrast to the discount rates used in the LCC analysis, which are designed to reflect a consumer's perspective. The 7-percent real value is an estimate of the average before-tax rate of return to private capital in the U.S. economy. The 3-percent real value represents the ''social rate of time preference,'' which is the rate at which society discounts future consumption flows to their present value.

I. Consumer Subgroup Analysis

In analyzing the potential impact of new energy conservation standards on consumers, DOE evaluates the impact on identifiable subgroups of consumers that may be disproportionately affected by a new or amended national standard. The purpose of a subgroup analysis is to determine the extent of any such disproportional impacts. DOE evaluates impacts on particular subgroups of consumers by analyzing the LCC impacts and PBP for those particular consumers from alternative standard levels. For this final rule, DOE analyzed the impacts of the considered standard levels on three subgroups: (1) Low-income households, (2) senior-only households, and (3) small businesses. The analysis used subsets of the RECS 2009 sample composed of households that meet the criteria and CBECS 2012 for the considered subgroups. DOE used the LCC and PBP spreadsheet model to estimate the impacts of the considered EL on these subgroups. Chapter 11 in the final rule TSD describes the consumer subgroup analysis.

J. Manufacturer Impact Analysis

1. Overview

DOE performed an MIA to estimate the financial impacts of new energy conservation standards on manufacturers of portable ACs and to estimate the potential impacts of such standards on direct employment and manufacturing capacity. The MIA has both quantitative and qualitative aspects and includes analyses of projected industry cash flows, INPV, investments in R&D and manufacturing capital, and domestic manufacturing employment. Additionally, the MIA seeks to determine how new or amended energy conservation standards might affect manufacturing capacity, and competition, as well as how standards contribute to overall regulatory burden. Finally, the MIA serves to identify any disproportionate impacts on manufacturer subgroups, including small business manufacturers.

The quantitative part of the MIA primarily relies on the GRIM, an industry cash flow model with inputs specific to this rulemaking. The key GRIM inputs include data on the industry cost structure, unit production costs, product shipments, manufacturer markups, and investments in R&D and manufacturing capital required to produce compliant products. The key GRIM outputs are the INPV, which is the sum of industry annual cash flows over the analysis period, discounted using the industry-weighted average cost of capital, and the impact to domestic manufacturing employment. The model uses standard accounting principles to estimate the impacts of more-stringent energy conservation standards on a given industry by comparing changes in INPV and domestic manufacturing employment between a no-new-standards case and the various standards cases (TSLs). To capture the uncertainty relating to manufacturer pricing strategies following new or amended standards, the GRIM estimates a range of possible impacts under different markup scenarios.

The qualitative part of the MIA addresses manufacturer characteristics and market trends. Specifically, the MIA considers such factors as a potential standard's impact on manufacturing capacity, competition within the industry, cumulative impact of other DOE and non-DOE regulations, and impacts on manufacturer subgroups. The complete MIA is outlined in chapter 12 of the final rule TSD.

DOE conducted the MIA for this rulemaking in three phases. In Phase 1 of the MIA, DOE prepared a profile of the portable AC manufacturing industry based on the market and technology assessment, preliminary manufacturer interviews, and publicly-available information. This included a top-down analysis of portable AC manufacturers that DOE used to derive preliminary financial inputs for the GRIM (*e.g.,* revenues; materials, labor, overhead, and depreciation expenses; selling, general, and administrative expenses (SG&A); and R&D expenses). DOE also used public sources of information to further calibrate its initial characterization of the portable AC manufacturing industry, including company filings of form 10–K from the SEC, corporate annual reports, the U.S. Census Bureau's ''Economic Census,'' and reports from Hoovers.[63]

In Phase 2 of the MIA, DOE prepared a framework industry cash-flow analysis to quantify the potential impacts of portable AC energy conservation standards. The GRIM uses several factors to determine a series of annual cash flows starting with the announcement of the standard and extending over a 30-year period

[61] EIA. *Annual Energy Outlook 2016 with Projections to 2040.* Washington, DC. Available at *www.eia.gov/forecasts/aeo/.* The standards finalized in this rulemaking will take effect a few years prior to the 2022 commencement of the Clean Power Plan compliance requirements. As DOE has not modeled the effect of CPP during the 30-year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. These energy efficiency standards are expected to put downward pressure on energy prices relative to the projections in the *AEO 2016* case that incorporates the CPP. Consequently, DOE used the electricity price projections found in the *AEO 2016* No-CPP case as these electricity price projections are expected to be lower, yielding more conservative estimates for consumer savings due to the energy efficiency standards.

[62] OMB. *Circular A–4: Regulatory Analysis.* September 17, 2003. Section E. Available at *www.whitehouse.gov/omb/memoranda/m03-21.html.*

[63] Available at: *http://www.hoovers.com/.*

following the compliance date of the standard. These factors include annual expected revenues, costs of sales, SG&A and R&D expenses, taxes, and capital expenditures. In general, energy conservation standards can affect manufacturer cash flow in three distinct ways: (1) Creating a need for increased investment, (2) raising production costs per unit, and (3) altering revenue due to higher per-unit prices and changes in sales volumes.

In addition, during Phase 2, DOE developed interview guides to distribute to manufacturers of portable ACs in order to develop other key GRIM inputs, including product and capital conversion costs, and to gather additional information on the anticipated effects of energy conservation standards on revenues, direct employment, capital assets, industry competitiveness, and subgroup impacts.

In Phase 3 of the MIA, DOE conducted structured, detailed interviews with representative manufacturers. During these interviews, DOE discussed engineering, manufacturing, procurement, and financial topics to validate assumptions used in the GRIM and to identify key issues or concerns. A description of the key issues raised by portable AC manufacturers during interviews conducted for the June 2016 ECS NOPR can be found in section IV.J.3 of the June 2016 ECS NOPR. See section IV.J.3 of this final rule for a description of public comments received by DOE regarding the June 2016 ECS NOPR. DOE also used manufacturer feedback to qualitatively assess impacts of new standards on manufacturing capacity, direct employment, and cumulative regulatory burden. See appendix 12A of the final rule TSD for an example of the NOPR-phase interview guide.

As part of Phase 3, DOE evaluated whether subgroups of manufacturers may be disproportionately impacted by new standards or may not be accurately represented by the average cost assumptions used to develop the industry cash flow analysis. Such manufacturer subgroups may include small business manufacturers, low-volume manufacturers (LVMs), niche players, and/or manufacturers exhibiting a cost structure that largely differs from the industry average. DOE identified one manufacturer subgroup for a separate impact analysis: Small business manufacturers. The small business subgroup is discussed in section VI.B of this document, ''Review under the Regulatory Flexibility Act'' and in chapter 12 of the final rule TSD.

2. Government Regulatory Impact Model (GRIM) and Key Inputs

DOE uses the GRIM to quantify the changes in cash flow due to new or amended standards that result in a higher or lower industry value. The GRIM uses a standard, annual discounted cash-flow analysis that incorporates manufacturer costs, markups, shipments, and industry financial information as inputs. The GRIM models changes in costs, distribution of shipments, investments, and manufacturer margins that could result from a new or amended energy conservation standard. The GRIM spreadsheet uses the inputs to arrive at a series of annual cash flows, beginning in 2017 (the base year of the analysis) and continuing to 2051. DOE calculated INPVs by summing the stream of annual discounted cash flows during this period. For manufacturers of portable ACs, DOE used a real discount rate of 6.6 percent, which was derived from industry financials and then modified according to feedback received during manufacturer interviews.

The GRIM calculates cash flows using standard accounting principles and compares changes in INPV between the no-new-standards case and each standards case. The difference in INPV between the no-new-standards case and a standards case represents the financial impact of the new or amended energy conservation standard on manufacturers. As discussed previously, DOE developed critical GRIM inputs using a number of sources, including publicly available data, results of the engineering analysis, and information gathered from industry during the course of manufacturer interviews. The GRIM results are presented in section V.B.2 of this document. Additional details about the GRIM, the discount rate, and other financial parameters can be found in chapter 12 of the final rule TSD.

a. Manufacturer Production Costs

Manufacturing a higher efficiency product is typically more expensive than manufacturing a baseline product due to the use of more complex and typically more costly components. The changes in the MPCs of the analyzed products can affect the revenues, gross margins, and cash flow of the industry. For each EL, DOE used the MPCs developed in the engineering analysis, as described in section IV.C.2 of this final rule and further detailed in chapter 5 of the final rule TSD. Additionally, DOE used information from its teardown analysis, described in section IV.C of this final rule, to disaggregate the MPCs into material and labor costs. For a complete description of the MPCs, see chapter 5 of the final rule TSD.

b. Shipment Projections

The GRIM estimates manufacturer revenues based on total unit shipment projections and the distribution of those shipments by EL. Changes in sales volumes and efficiency mix over time can significantly affect manufacturer finances. For this analysis, the GRIM used the NIA's annual shipment forecasts derived from the shipments analysis from 2017 (the base year) to 2051 (the end of the analysis period). See chapter 9 of the NOPR TSD for additional details.

c. Product and Capital Conversion Costs

New energy conservation standards may cause manufacturers to incur conversion costs to bring their production facilities and equipment designs into compliance with the new standards. DOE evaluated the level of conversion-related expenditures that would be needed to comply with each considered EL. For the MIA, DOE classified these conversion costs into two major groups: (1) Product conversion costs; and (2) capital conversion costs. Product conversion costs are investments in R&D, testing, marketing, and other non-capitalized costs necessary to make product designs comply with new or amended energy conservation standards. Capital conversion costs are investments in property, plant, and equipment necessary to adapt or change existing production facilities such that new compliant product designs can be fabricated and assembled.

DOE used multiple sources of data to evaluate the level of product and capital conversion costs and stranded assets manufacturers would likely face to comply with new energy conservation standards. In estimating per-platform conversion costs at each EL considered in this final rule, DOE primarily used estimates of capital requirements derived from the portable AC product teardown analysis and the engineering model (as described in section IV.C of this final rule) in combination with the conversion cost assumptions used in the final rule for dehumidifiers. DOE also used feedback provided by manufacturers during interviews. Using the test sample efficiency distribution (including AHAM-provided data points), per-platform conversion cost estimates were then aggregated and scaled to derive total industry estimates of product and capital conversion costs.

In general, DOE assumes that all conversion-related investments occur

between the year the final rule is published and the year by which manufacturers must comply with the new or amended standards. The investment figures used in the GRIM can be found in section V.B.2 of this final rule. For additional information on the estimated product conversion and capital conversion costs, see chapter 12 of the final rule TSD.

d. Markup Scenarios

MSPs include direct manufacturing production costs (*i.e.,* labor, materials, and overhead estimated in DOE's MPCs) and all non-production costs (*i.e.,* SG&A, R&D, and interest), along with profit. To calculate the MSPs in the GRIM, DOE applied non-production cost markups to the MPCs estimated in the engineering analysis for each product class and EL. Modifying these markups in the standards case yields different sets of impacts on manufacturers. For the MIA, DOE modeled two standards-case markup scenarios to represent uncertainty regarding the potential impacts on prices and profitability for manufacturers following the implementation of new or amended energy conservation standards: (1) A preservation of gross margin percentage markup scenario; and (2) a preservation of per-unit operating profit markup scenario. These scenarios lead to different markup values that, when applied to the MPCs, result in varying revenue and cash flow impacts.

Under the preservation of gross margin percentage scenario, DOE applied a single uniform ''gross margin percentage'' markup across all ELs, which assumes that manufacturers would be able to maintain the same amount of profit as a percentage of revenues at all ELs within a product class. DOE used the baseline manufacturer markup, 1.42, which accounts for the two sourcing structures that characterize the portable AC market. Single-duct and dual-duct portable ACs sold in the U.S. are manufactured by overseas original equipment manufacturers (OEMs) either for sale by contract to an importer or for direct sale to retailers and builders. The MPCs developed in the engineering analysis, as detailed in chapter 5 of the final rule TSD, reflect the cost of manufacturing at the OEM. For the OEM to importer sourcing structure, this production cost is marked up once by the OEM and again by the contracting the company who imports the product and sells it to retailers. This markup was used for all products when modeling the no-new-standards in the GRIM. This scenario represents the upper bound of industry profitability as manufacturers are able to fully pass on additional production costs due to standards to their customers under this scenario.

Under the preservation of per-unit operating profit markup scenario, DOE modeled a situation in which manufacturers are not able to increase per-unit operating profit in proportion to increases in manufacturer production costs. This scenario represents the lower bound of profitability and a more substantial impact on the portable AC industry as manufacturers accept a lower margin in an attempt to offer price competitive products while maintaining the same level of earnings before interest and tax (EBIT) they saw prior to new or amended standards.

A comparison of industry financial impacts under the two markup scenarios is presented in section V.B.2.a of this final rule.

3. Discussion of Comments

During and following the July 2016 STD NOPR public meeting, manufacturers and trade organizations commented on the potential impact of new energy conservation standards on portable AC manufacturers. These comments are outlined below. DOE considered these comments when updating the analysis for this final rule.

During the July 2016 STD Public Meeting, both NAM and AHAM requested that DOE provide more details about conversion cost model assumptions in order to facilitate more focused feedback from member companies. Specific requests included the number of companies and production lines that were assumed in developing the industry conversion cost estimates. (NAM, Public Meeting Transcript, No. 39 at pp. 118–121; AHAM, Public Meeting Transcript, No. 39 at pp. 120–121)

Relatedly, during the July 20l6 Public Meeting, ASAP commented that the industry capital conversion cost estimated for the portable AC industry to reach TSL 2 is approximately eight times greater than the industry capital conversion costs estimated for dehumidifier manufacturers to comply with the standards adopted in the 2016 final rule for dehumidifiers (also TSL 2), despite the fact that, in both cases, DOE estimated that approximately 50 percent of platforms will require complete redesigns. ASAP requested that DOE provide details about the number of platforms assumed in estimates of industry conversion costs. (ASAP, Public Meeting Transcript, No. 39 at pp. 122–123)

DOE addressed the AHAM, NAM, and ASAP requests for information related to the inputs used in the estimation of industry conversion costs in the DOE response memo on August 19, 2016.[64]

Regarding ASAP's comments related to differences in the magnitude of industry capital conversion cost estimates between the portable AC and the dehumidifier rulemakings, multiple factors explain the differences in industry conversion cost estimates between this final rule and the dehumidifiers final rule. First, on a per-platform capital investment basis, DOE estimates that portable ACs are more costly to produce than dehumidifiers, and, accordingly, capital changes are more costly. Additionally, DOE clarifies that, in the June 2016 ECS NOPR, it had estimated that approximately 77 percent of portable AC platforms would require at least a partial redesign (including a change in chassis size) at TSL 2. 81 FR 38398, 38448 (June 13, 2016). Finally, for the June 2016 ECS NOPR, DOE estimated that there were approximately 48 portable AC platforms available on the U.S. market (updated to 54 for this final rule), a substantially greater number of platforms than was estimated for the dehumidifier industry (DOE estimated there were approximately 30 dehumidifier platforms available on the U.S. market). Again, DOE provided information related to conversion cost model assumptions used for this final rule in the DOE response memo on August 19, 2016.[65]

Regarding future shipments of portable ACs, AHAM commented that if energy conservation standards result in reduced consumer demand, which, in turn, leads to reduced shipments volumes relative to those estimated in the June 2016 ECS NOPR, negative impacts to manufacturers will be compounded. AHAM suggested that DOE re-examine manufacturer impacts to include a significantly reduced shipment scenario reflecting the potential reduction in consumer demand. (AHAM, No. 43 at p. 28) AHAM suggested that after doing this, DOE reevaluate its balancing of costs and benefits taking into account the increased burden on manufacturers when shipment volumes drop as AHAM projects. (AHAM, No. 43 at p. 28)

As discussed in section IV.G of this document, AHAM's suggestion of a decline in shipments relative to what was forecasted in the June 2016 ECS NOPR does not appear to be based on any data source. Accordingly, DOE has not modeled an alternative shipments

[64] DOE's response to AHAM's request can be found at *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0033-0038.*

[65] Id.

and manufacturer impacts scenario. See section IV.G of this document for details on DOE's justification of its portable AC shipments forecasts.

Relatedly, AHAM also commented that the estimated range of percent reduction in INPV (28.1 to 30.6) is dramatic for a small industry segment and out of proportion to the potential benefits. (AHAM, No. 43 at p. 28)

As discussed in section V.C.1 of this document, DOE weighs both the benefits and burdens associated with each TSL in order to decide upon a final standard level. Please see section V.C.1 for the cost-benefit discussion associated with the standard adopted in this final rule.

Finally, AHAM provided several comments relating to DOE's treatment of cumulative regulatory burdens. AHAM suggested that DOE include in its analysis of cumulative regulatory impacts any rulemaking that would have an overlapping compliance period to that of new the portable ACs standard. AHAM stated that this adjustment would more realistically reflect regulatory burden because it evaluates all rules with which manufacturers must comply at any given point. AHAM also stated that, in general, the time and resources needed to evaluate and respond to DOE's test procedures and energy conservation standards should not be excluded from the cumulative regulatory burden discussion. AHAM further commented that cumulative regulatory burden analysis should also account for the timing and technical and economic relationship of those rulemakings. AHAM stated that, for example, DOE's recent practice of amending the test procedure while at the same time proposing amended standards increases the burden on manufacturers in responding to DOE's proposed rules. AHAM added that home appliances are now in an endless cycle of regulation, where as soon as one compliance effort ends or is near completion, another round of regulation to change the standard again begins. (AHAM, No. 43 at pp. 29–30)

For this final rule analysis of cumulative regulatory burdens, DOE has extended the analysis to include energy conservation standards for other products also produced by portable AC manufacturers with a standards compliance year occurring within the compliance period for the new portable AC standard, as set forth in this final rule (2017 to 2022). Additionally, as in the June 2016 ECS NOPR analysis, the cumulative regulatory burden analysis includes energy conservation standards for products also produced by portable AC manufacturers with compliance years occurring within 3 years after the compliance year for the new portable AC standard. DOE will consider the remaining issues put forth by AHAM in the future as it continues to evaluate its approach to assessing cumulative regulatory burden.

K. Emissions Analysis

The emissions analysis consists of two components. The first component estimates the effect of potential energy conservation standards on power sector and site (where applicable) combustion emissions of CO_2, NO_X, SO_2, and Hg. The second component estimates the impacts of potential standards on emissions of two additional GHGs, CH_4 and N_2O, as well as the reductions to emissions of all species due to ''upstream'' activities in the fuel production chain. These upstream activities comprise extraction, processing, and transporting fuels to the site of combustion. The associated emissions are referred to as upstream emissions.

The analysis of power sector emissions uses marginal emissions factors that were derived from data in *AEO 2016,* as described in section IV.M. Details of the methodology are described in the appendices to chapters 13 and 15 of the final rule TSD.

Combustion emissions of CH_4 and N_2O are estimated using emissions intensity factors published by the EPA—GHG Emissions Factors Hub.[66] The FFC upstream emissions are estimated based on the methodology described in chapter 15 of the final rule TSD. The upstream emissions include both emissions from fuel combustion during extraction, processing, and transportation of fuel, and ''fugitive'' emissions (direct leakage to the atmosphere) of CH_4 and CO_2.

The emissions intensity factors are expressed in terms of physical units per MWh or MMBtu of site energy savings. Total emissions reductions are estimated using the energy savings calculated in the NIA.

For CH_4 and N_2O, DOE calculated emissions reduction in tons and also in terms of units of CO_2 equivalent (CO_2eq). Emissions of CH_4 and N_2O are often converted to CO_2eq by multiplying each ton of gas by the gas' GWP over a 100-year time horizon. Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change,[67] DOE used GWP values of 28 for CH_4 and 265 for N_2O.

The *AEO* incorporates the projected impacts of existing air quality regulations on emissions. *AEO 2016* generally represents current legislation and environmental regulations, including recent government actions, for which implementing regulations were available as of the end of February 2016. DOE's estimation of impacts accounts for the presence of the emissions control programs discussed in the following paragraphs.

SO_2 emissions from affected electric generating units (EGUs) are subject to nationwide and regional emissions cap-and-trade programs. Title IV of the Clean Air Act sets an annual emissions cap on SO_2 for affected EGUs in the 48 contiguous States and the District of Columbia (DC). (42 U.S.C. 7651 *et seq.*) SO_2 emissions from 28 eastern States and DC were also limited under the Clean Air Interstate Rule (CAIR). 70 FR 25162 (May 12, 2005). CAIR created an allowance-based trading program that operates along with the Title IV program. In 2008, CAIR was remanded to EPA by the U.S. Court of Appeals for the District of Columbia Circuit, but it remained in effect.[68] In 2011, EPA issued a replacement for CAIR, the Cross-State Air Pollution Rule (CSAPR). 76 FR 48208 (Aug. 8, 2011). On August 21, 2012, the D.C. Circuit issued a decision to vacate CSAPR,[69] and the court ordered EPA to continue administering CAIR. On April 29, 2014, the U.S. Supreme Court reversed the judgment of the D.C. Circuit and remanded the case for further proceedings consistent with the Supreme Court's opinion.[70] On October 23, 2014, the D.C. Circuit lifted the stay of CSAPR.[71] Pursuant to this action,

[66] Available at *www2.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub.*

[67] Intergovernmental Panel on Climate Change. Anthropogenic and Natural Radiative Forcing. In *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Chapter 8. 2013. Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P.M. Midgley, Editors. Cambridge University Press: Cambridge, United Kingdom and New York, NY, USA.

[68] See *North Carolina* v. *EPA,* 531 F.3d 896 (D.C. Cir. 2008), modified on rehearing, 550 F.3d 1176 (D.C. Cir. 2008).

[69] See *EME Homer City Generation, L.P.* v. *EPA,* 696 F.3d 7 (D.C. Cir. 2012).

[70] See *EPA* v. *EME Homer City Generation, L.P.* 134 S. Ct. 1584 (U.S. 2014). The Supreme Court held in part that EPA's methodology for quantifying emissions that must be eliminated in certain States due to their impacts in other downwind States was based on a permissible, workable, and equitable interpretation of the Clean Air Act provision that provides statutory authority for CSAPR.

[71] See *EME Homer City Generation, L.P.* v. *EPA,* Order (D.C. Cir. filed October 23, 2014) (No. 11–1302).

CSAPR went into effect (and CAIR ceased to be in effect) as of January 1, 2015.[72] *AEO 2016* incorporates implementation of CSAPR.

The attainment of emissions caps is typically flexible among EGUs and is enforced through the use of emissions allowances and tradable permits. Under existing EPA regulations, any excess SO_2 emissions allowances resulting from the lower electricity demand caused by the adoption of an efficiency standard could be used to permit offsetting increases in SO_2 emissions by any regulated EGU. In past years, DOE recognized that there was uncertainty about the effects of efficiency standards on SO_2 emissions covered by the existing cap-and-trade system, but it concluded that negligible reductions in power sector SO_2 emissions would occur as a result of standards.

Beginning in 2016, however, SO_2 emissions will fall as a result of the Mercury and Air Toxics Standards (MATS) for power plants. 77 FR 9304 (Feb. 16, 2012). In the MATS final rule, EPA established a standard for hydrogen chloride as a surrogate for acid gas hazardous air pollutants (HAP), and also established a standard for SO_2 (a non-HAP acid gas) as an alternative equivalent surrogate standard for acid gas HAP. The same controls are used to reduce HAP and non-HAP acid gas; thus, SO_2 emissions will be reduced as a result of the control technologies installed on coal-fired power plants to comply with the MATS requirements for acid gas. *AEO 2016* assumes that, in order to continue operating, coal plants must have either flue gas desulfurization or dry sorbent injection systems installed by 2016. Both technologies, which are used to reduce acid gas emissions, also reduce SO_2 emissions. Under the MATS, emissions will be far below the cap established by CSAPR, so it is unlikely that excess SO_2 emissions allowances resulting from the lower electricity demand would be needed or used to permit offsetting increases in SO_2 emissions by any regulated EGU.[73] Therefore, DOE believes that energy conservation standards that decrease electricity generation will generally reduce SO_2 emissions in 2016 and beyond. CSAPR also applies to NO_X and it supersedes the regulation of NO_X under CAIR.

CAIR established a cap on NO_X emissions in 28 eastern States and the District of Columbia. Energy conservation standards are expected to have little effect on NO_X emissions in those States covered by CAIR because excess NO_X emissions allowances resulting from the lower electricity demand could be used to permit offsetting increases in NO_X emissions from other facilities. However, standards would be expected to reduce NO_X emissions in the States not affected by the caps, so DOE estimated NO_X emissions reductions from the standards considered in this final rule for these States.

The MATS limit mercury emissions from power plants, but they do not include emissions caps and, as such, DOE's energy conservation standards would likely reduce Hg emissions. DOE estimated mercury emissions reduction using emissions factors based on *AEO 2016,* which incorporates the MATS.

The *AEO 2016* Reference case (and some other cases) assumes implementation of the Clean Power Plan (CPP), which is the EPA program to regulate CO_2 emissions at existing fossil-fired electric power plants.[74] DOE used the *AEO 2016* No-CPP case as a basis for developing emissions factors for the electric power sector to be consistent with its use of the No-CPP case in the NIA.[75]

L. Monetizing Carbon Dioxide and Other Emissions Impacts

As part of the development of this rule, DOE considered the estimated monetary benefits from the reduced emissions of CO_2, CH_4, N_2O and NO_X that are expected to result from each of the TSLs considered. In order to make this calculation analogous to the calculation of the NPV of consumer benefit, DOE considered the reduced emissions expected to result over the lifetime of products shipped in the projection period for each TSL. This section summarizes the basis for the values used for monetizing the emissions benefits and presents the values considered in this final rule.

For this final rule, DOE relied on a set of values for the social cost of carbon (SC-CO_2) that was developed by a Federal interagency process. The basis for these values is summarized in the next section, and a more detailed description of the methodologies used is provided as an appendix to chapter 14 of the final rule TSD.

1. Social Cost of Carbon

The SC-CO_2 is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) climate-change-related changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services. Estimates of the SC-CO_2 are provided in dollars per metric ton of CO_2. A domestic SC-CO_2 value is meant to reflect the value of damages in the U.S. resulting from a unit change in CO_2 emissions, while a global SC-CO_2 value is meant to reflect the value of damages worldwide.

Under section 1(b)(6) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), agencies must, to the extent permitted by law, ''assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.'' The purpose of the SC-CO_2 estimates presented here is to allow agencies to incorporate the monetized social benefits of reducing CO_2 emissions into

[72] On July 28, 2015, the D.C. Circuit issued its opinion regarding the remaining issues raised with respect to CSAPR that were remanded by the Supreme Court. The D.C. Circuit largely upheld CSAPR, but remanded to EPA without *vacatur* certain States' emission budgets for reconsideration. *EME Homer City Generation, LP* v. *EPA,* 795 F.3d 118 (D.C. Cir. 2015).

[73] DOE notes that on June 29, 2015, the U.S. Supreme Court ruled that the EPA erred when the agency concluded that cost did not need to be considered in the finding that regulation of hazardous air pollutants from coal- and oil-fired electric utility steam generating units (EGUs) is appropriate and necessary under section 112 of the Clean Air Act (CAA). *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015). The Supreme Court did not vacate the MATS rule, and DOE has tentatively determined that the Court's decision on the MATS rule does not change the assumptions regarding the impact of energy conservation standards on SO_2 emissions. Further, the Court's decision does not change the impact of the energy conservation standards on mercury emissions. The EPA, in response to the U.S. Supreme Court's direction, has now considered cost in evaluating whether it is appropriate and necessary to regulate coal- and oil-fired EGUs under the CAA. EPA concluded in its final supplemental finding that a consideration of cost does not alter the EPA's previous determination that regulation of hazardous air pollutants, including mercury, from coal- and oil-fired EGUs, is appropriate and necessary. 81 FR 24420 (April 25, 2016). The MATS rule remains in effect, but litigation is pending in the D.C. Circuit Court of Appeals over EPA's final supplemental finding MATS rule. *https://www.gpo.gov/fdsys/pkg/FR-2016-04-25/pdf/2016-09429.pdf.*

[74] U.S. Environmental Protection Agency, ''Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units'' (Washington, DC: October 23, 2015). *https://www.federalregister.gov/articles/2015/10/23/2015-22842/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.*

[75] As DOE has not modeled the effect of CPP during the 30-year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. With respect to estimated CO_2 and NO_X emissions reductions and their associated monetized benefits, if implemented the CPP would result in an overall decrease in CO_2 emissions from electric generating units (EGUs), and would thus likely reduce some of the estimated CO_2 reductions associated with this rulemaking.

cost-benefit analyses of regulatory actions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

As part of the interagency process that developed these SC-CO_2 estimates, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. The main objective of this process was to develop a range of SC-CO_2 values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SC-CO_2 estimates used in the rulemaking process.

a. Monetizing Carbon Dioxide Emissions

When attempting to assess the incremental economic impacts of CO_2 emissions, the analyst faces a number of challenges. A report from the National Research Council [76] points out that any assessment will suffer from uncertainty, speculation, and lack of information about (1) future emissions of GHGs, (2) the effects of past and future emissions on the climate system, (3) the impact of changes in climate on the physical and biological environment, and (4) the translation of these environmental impacts into economic damages. As a result, any effort to quantify and monetize the harms associated with climate change will raise questions of science, economics, and ethics and should be viewed as provisional.

Despite the limits of both quantification and monetization, SC-CO_2 estimates can be useful in estimating the social benefits of reducing CO_2 emissions. Although any numerical estimate of the benefits of reducing CO_2 emissions is subject to some uncertainty, that does not relieve DOE of its obligation to attempt to factor those benefits into its cost-benefit analysis. Moreover, the interagency working group's (IWG) SC-CO_2 estimates are well supported by the existing scientific and economic literature. As a result, DOE has relied on the IWG's SC-CO_2 estimates in quantifying the social benefits of reducing CO_2 emissions. DOE estimates the benefits from reduced (or costs from increased) emissions in any future year by multiplying the change in emissions in that year by the SC-CO_2 values appropriate for that year. The NPV of the benefits can then be calculated by multiplying each of these future benefits by an appropriate discount factor and summing across all affected years.

It is important to emphasize that the current SC-CO_2 values reflect the IWG's best assessment, based on current data, of the societal effect of CO_2 emissions. The IWG is committed to updating these estimates as the science and economic understanding of climate change and its impacts on society improves over time. In the meantime, the IWG will continue to explore the issues raised by this analysis and consider public comments as part of the ongoing interagency process.

b. Development of Social Cost of Carbon Values

In 2009, an interagency process was initiated to offer a preliminary assessment of how best to quantify the benefits from reducing CO_2 emissions. To ensure consistency in how benefits are evaluated across Federal agencies, the Administration sought to develop a transparent and defensible method, specifically designed for the rulemaking process, to quantify avoided climate change damages from reduced CO_2 emissions. The IWG did not undertake any original analysis. Instead, it combined SC-CO_2 estimates from the existing literature to use as interim values until a more comprehensive analysis could be conducted. The outcome of the preliminary assessment by the IWG was a set of five interim values that represented the first sustained interagency effort within the U.S. government to develop an SC-CO_2 for use in regulatory analysis. The results of this preliminary effort were presented in several proposed and final rules issued by DOE and other agencies.

c. Current Approach and Key Assumptions

After the release of the interim values, the IWG reconvened on a regular basis to generate improved SC-CO_2 estimates. Specially, the IWG considered public comments and further explored the technical literature in relevant fields. It relied on three integrated assessment models commonly used to estimate the SC-CO_2: The FUND, DICE, and PAGE models. These models are frequently cited in the peer-reviewed literature and were used in the last assessment of the Intergovernmental Panel on Climate Change (IPCC). Each model was given equal weight in the SC-CO_2 values that were developed.

Each model takes a slightly different approach to model how changes in emissions result in changes in economic damages. A key objective of the interagency process was to enable a consistent exploration of the three models, while respecting the different approaches to quantifying damages taken by the key modelers in the field. An extensive review of the literature was conducted to select three sets of input parameters for these models: Climate sensitivity, socio-economic and emissions trajectories, and discount rates. A probability distribution for climate sensitivity was specified as an input into all three models. In addition, the IWG used a range of scenarios for the socio-economic parameters and a range of values for the discount rate. All other model features were left unchanged, relying on the model developers' best estimates and judgments.

In 2010, the IWG selected four sets of SC-CO_2 values for use in regulatory analyses. Three sets of values are based on the average SC-CO_2 from the three integrated assessment models, at discount rates of 2.5, 3, and 5 percent. The fourth set, which represents the 95th percentile SC-CO_2 estimate across all three models at a 3-percent discount rate, was included to represent higher-than-expected impacts from climate change further out in the tails of the SC-CO_2 distribution. The values grow in real terms over time. Additionally, the IWG determined that a range of values from 7 percent to 23 percent should be used to adjust the global SC-CO_2 to calculate domestic effects,[77] although preference is given to consideration of the global benefits of reducing CO_2 emissions. Table IV.13 presents the values in the 2010 IWG report.[78]

[76] National Research Council. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*. 2009. National Academies Press: Washington, DC.

[77] It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no *a priori* reason why domestic benefits should be a constant fraction of net global damages over time.

[78] U.S. Government—IWG on Social Cost of Carbon. *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*. February 2010. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf.*

TABLE IV.13—ANNUAL SC-CO_2 VALUES FROM 2010 IWG REPORT

[2007$ per metric ton CO_2]

Year	Discount rate and statistic			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

In 2013 the IWG released an update (which was revised in July 2015) that contained SC-CO_2 values that were generated using the most recent versions of the three integrated assessment models that have been published in the peer-reviewed literature.[79] DOE used these values for this final rule. Table IV.14 shows the four sets of SC-CO_2 estimates from the latest interagency update in 5-year increments from 2010 through 2050. The full set of annual SC-CO_2 estimates from 2010 through 2050 is reported in appendix 14A of the final rule TSD. The central value that emerges is the average SC-CO_2 across models at the 3-percent discount rate. However, for purposes of capturing the uncertainties involved in regulatory impact analysis, the IWG emphasizes the importance of including all four sets of SC-CO_2 values.

TABLE IV.14—ANNUAL SC-CO_2 VALUES FROM 2013 IWG UPDATE (REVISED JULY 2015)

[2007$ per metric ton CO_2]

Year	Discount rate and statistic			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
2010	10	31	50	86
2015	11	36	56	105
2020	12	42	62	123
2025	14	46	68	138
2030	16	50	73	152
2035	18	55	78	168
2040	21	60	84	183
2045	23	64	89	197
2050	26	69	95	212

It is important to recognize that a number of key uncertainties remain, and that current SC-CO_2 estimates should be treated as provisional and revisable because they will evolve with improved scientific and economic understanding. The IWG also recognizes that the existing models are imperfect and incomplete. The National Research Council report mentioned previously points out that there is tension between the goal of producing quantified estimates of the economic damages from an incremental ton of carbon and the limits of existing efforts to model these effects. There are a number of analytical challenges that are being addressed by the research community, including research programs housed in many of the Federal agencies participating in the interagency process to estimate the SC-CO_2. The IWG intends to periodically review and reconsider those estimates to reflect increasing knowledge of the science and economics of climate impacts, as well as improvements in modeling.[80]

DOE converted the values from the 2013 interagency report (revised July 2015), to 2015$ using the implicit price deflator for gross domestic product (GDP) from the Bureau of Economic Analysis. For each of the four sets of SC-CO_2 cases, the values for emissions in 2020 were $13.5, $47.4, $69.9, and $139 per metric ton avoided (values expressed in 2015$). DOE derived values after 2050 based on the trend in 2010–2050 in each of the four cases in the interagency update.

DOE multiplied the CO_2 emissions reduction estimated for each year by the SC-CO_2 value for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE

[79] U.S. Government—IWG on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* May 2013. Revised July 2015. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

[80] In November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SC-CO_2 estimates. 78 FR 70586. In July 2015 OMB published a detailed summary and formal response to the many comments that were received: This is available at *https://www.whitehouse.gov/blog/2015/07/02/estimating-benefits-carbon-dioxide-emissions-reductions.* It also stated its intention to seek independent expert advice on opportunities to improve the estimates, including many of the approaches suggested by commenters.

discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SC-CO_2 values in each case.

DOE received several comments on the development of and the use of the SC-CO_2 values in its analyses. A group of trade associations led by the U.S. Chamber of Commerce objected to DOE's continued use of the SC-CO_2 in the cost-benefit analysis and stated that the SC-CO_2 calculation should not be used in any rulemaking until it undergoes a more rigorous notice, review, and comment process. (U.S. Chamber of Commerce, No. 36 at p. 4) AHAM opposed DOE's analysis of the social cost of carbon in this rulemaking and supported the comments submitted by the U.S. Chamber of Commerce. (AHAM, No. 43 at p. 29) IECA stated that before DOE applies any SC-CO_2 estimate in its rulemaking, DOE must correct the methodological flaws that commenters have raised about the IWG's SC-CO_2 estimate. IECA referenced a U.S. Government Accountability Office report that IECA believes highlights severe uncertainties in SC-CO_2 values. (IECA, No. 33 at p. 2)

In contrast, the Joint Advocates stated that only a partial accounting of the costs of climate change (those most easily monetized) can be provided, which inevitably involves incorporating elements of uncertainty. The Joint Advocates commented that accounting for the economic harms caused by climate change is a critical component of sound benefit-cost analyses of regulations that directly or indirectly limit GHGs. The Joint Advocates stated that several Executive Orders direct Federal agencies to consider non-economic costs and benefits, such as environmental and public health impacts. (Joint Advocates, No. 23 at pp. 2–3) Furthermore, the Joint Advocates argued that without an SC-CO_2 estimate, regulators would by default be using a value of zero for the benefits of reducing carbon pollution, thereby implying that carbon pollution has no costs. The Joint Advocates stated that it would be arbitrary for a Federal agency to weigh the societal benefits and costs of a rule with significant carbon pollution effects but to assign no value at all to the considerable benefits of reducing carbon pollution. (Joint Advocates, No. 23 at p. 3)

The Joint Advocates stated that assessment and use of the Integrated Assessment Models (IAMs) in developing the SC-CO_2 values has been transparent. The Joint Advocates further noted that repeated opportunities for public comment demonstrate that the IWG's SC-CO_2 estimates were developed and are being used transparently. (Joint Advocates, No. 23 at p. 4) The Joint Advocates stated that (1) the IAMs used reflect the best available, peer-reviewed science to quantify the benefits of carbon emission reductions; (2) uncertainty is not a valid reason for rejecting the SC-CO_2 analysis, and (3) the IWG was rigorous in addressing uncertainty inherent in estimating the economic cost of pollution. (Joint Advocates, No. 23 at pp. 5, 17–18, 18–19) The Joint Advocates added that the increase in the SC-CO_2 estimate in the 2013 update reflects the growing scientific and economic research on the risks and costs of climate change, but is still very likely an underestimate of the SC-CO_2. (Joint Advocates, No. 23 at p. 4)

In response to the comments on the SC-CO_2, in conducting the interagency process that developed the SC-CO_2 values, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. Key uncertainties and model differences transparently and consistently inform the range of SC-CO_2 estimates. These uncertainties and model differences are discussed in the IWG's reports, as are the major assumptions. Specifically, uncertainties in the assumptions regarding climate sensitivity, as well as other model inputs such as economic growth and emissions trajectories, are discussed and the reasons for the specific input assumptions chosen are explained. However, the three integrated assessment models used to estimate the SC-CO_2 are frequently cited in the peer-reviewed literature and were used in the last assessment of the IPCC. In addition, new versions of the models that were used in 2013 to estimate revised SC-CO_2 values were published in the peer-reviewed literature. The Government Accountability Office (GAO) report mentioned by IECA describes the approach the IWG used to develop estimates of the SC-CO_2 and noted that evaluating the quality of the IWG's approach was outside the scope of GAO's review. Although uncertainties remain, the revised SC-CO_2 values are based on the best available scientific information on the impacts of climate change. The current estimates of the SC-CO_2 have been developed over many years, using the best science available, and with input from the public. DOE notes that not using SC-CO_2 estimates because of uncertainty would be tantamount to assuming that the benefits of reduced carbon emissions are zero, which is inappropriate. Furthermore, the commenters have not offered alternative estimates of the SC-CO_2 that they believe are more accurate.

As noted previously, in November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SC-CO_2 estimates. 78 FR 70586 (Nov. 26, 2013). In July 2015, OMB published a detailed summary and formal response to the many comments that were received. DOE stands ready to work with OMB and the other members of the IWG on further review and revision of the SC-CO_2 estimates as appropriate.[81]

IECA stated that the SC-CO_2 places U.S. manufacturing at a distinct competitive disadvantage. IECA added that the higher SC-CO_2 cost drives manufacturing companies offshore and increases imports of more carbon-intensive manufactured goods. (IECA, No. 33 at pp. 1–2) In response, DOE notes that the SC-CO2 is simply a metric that Federal agencies use to estimate the societal benefits of policy actions that reduce CO_2 emissions.

IECA stated that the SC-CO_2 value is unrealistically high in comparison to carbon market prices. (IECA, No. 33 at p. 3) In response, DOE notes that the SC-CO_2 is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year, whereas carbon trading prices in existing markets are simply a function of the demand and supply of tradable permits in those markets. Such prices depend on the arrangements in specific carbon markets, and do not necessarily bear relation to the damages associated with an incremental increase in carbon emissions.

IECA stated that the SC-CO_2 estimates must be made consistent with OMB Circular A–4, and noted that it uses a lower discount rate than recommended by OMB Circular A–4 and values global benefits rather than solely U.S. domestic benefits. (IECA, No. 33 at p. 5)

OMB Circular A–4 provides two suggested discount rates for use in regulatory analysis: 3 percent and 7 percent. Circular A–4 states that the 3 percent discount rate is appropriate for ''regulation [that] primarily and directly affects private consumption (*e.g.,* through higher consumer prices for goods and services).'' The IWG that developed the SC-CO_2 values for use by Federal agencies examined the

[81] See *https://www.whitehouse.gov/blog/2015/07/02/estimating-benefits-carbon-dioxide-emissions-reductions.* OMB also stated its intention to seek independent expert advice on opportunities to improve the estimates, including many of the approaches suggested by commenters.

economics literature and concluded that the consumption rate of interest is the correct concept to use in evaluating the net social costs of a marginal change in CO_2 emissions, as the impacts of climate change are measured in consumption-equivalent units in the three models used to estimate the SC-CO_2. The IWG chose to use three discount rates to span a plausible range of constant discount rates: 2.5, 3, and 5 percent per year. The central value, 3 percent, is consistent with estimates provided in the economics literature and OMB's Circular A–4 guidance for the consumption rate of interest.

Regarding the use of global SC-CO_2 values, DOE's analysis estimates both global and domestic benefits of CO_2 emissions reductions. Following the recommendation of the IWG, DOE places more focus on a global measure of SC-CO_2. The climate change problem is highly unusual in at least two respects. First, it involves a global externality: Emissions of most GHGs contribute to damages around the world even when they are emitted in the U.S. Consequently, to address the global nature of the problem, the SC-CO_2 must incorporate the full (global) damages caused by GHG emissions. Second, climate change presents a problem that the U.S. alone cannot solve. Even if the U.S. were to reduce its GHG emissions to zero, that step would be far from enough to avoid substantial climate change. Other countries would also need to take action to reduce emissions if significant changes in the global climate are to be avoided. Emphasizing the need for a global solution to a global problem, the U.S. has been actively involved in seeking international agreements to reduce emissions and in encouraging other nations, including emerging major economies, to take significant steps to reduce emissions. When these considerations are taken as a whole, the IWG concluded that a global measure of the benefits from reducing U.S. emissions is preferable. DOE's approach is not in contradiction of the requirement to weigh the need for national energy conservation, as one of the main reasons for national energy conservation is to contribute to efforts to mitigate the effects of global climate change.

2. Social Cost of Methane and Nitrous Oxide

The Joint Advocates stated that EPA and other agencies have begun using a methodology developed to specifically measure the social cost of methane in recent proposed rulemakings, and recommended that DOE use the social cost of methane metric to more accurately reflect the true benefits of energy conservation standards. They stated that the methodology in the study used to develop the social cost of methane provides reasonable estimates that reflect updated evidence and provide consistency with the Government's accepted methodology for estimating the SC-CO_2. (Joint Advocates, No. 23 at pp. 19–20)

While carbon dioxide is the most prevalent GHG emitted into the atmosphere, other GHGs are also important contributors. These include methane and nitrous oxide. GWP values are often used to convert emissions of non-CO_2 GHGs to CO_2-equivalents to facilitate comparison of policies and inventories involving different GHGs. While GWPs allow for some useful comparisons across gases on a physical basis, using the SC-CO_2 to value the damages associated with changes in CO_2-equivalent emissions is not optimal. This is because non-CO_2 GHGs differ not just in their potential to absorb infrared radiation over a given time frame, but also in the temporal pathway of their impact on radiative forcing, which is relevant for estimating their social cost but not reflected in the GWP. Physical impacts other than temperature change also vary across gases in ways that are not captured by GWP.

In light of these limitations and the paucity of peer-reviewed estimates of the social cost of non-CO_2 gases in the literature, the 2010 Social Cost of Carbon Technical Support Document did not include an estimate of the social cost of non-CO_2 GHGs and did not endorse the use of GWP to approximate the value of non-CO_2 emission changes in regulatory analysis. Instead, the IWG noted that more work was needed to link non-CO_2 GHG emission changes to economic impacts.

Since that time, new estimates of the social cost of non-CO_2 GHG emissions have been developed in the scientific literature, and a recent study by Marten *et al.* (2015) provided the first set of published estimates for the social cost of CH_4 and N_2O emissions that are consistent with the methodology and modeling assumptions underlying the IWG SC-CO_2 estimates.[82] Specifically, Marten *et al.* used the same set of three integrated assessment models, five socioeconomic and emissions scenarios, equilibrium climate sensitivity distribution, three constant discount rates, and the aggregation approach used by the IWG to develop the SC-CO_2 estimates. An addendum to the IWG's Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866 summarizes the Marten *et al.* methodology and presents the SC-CH_4 and SC-N_2O estimates from that study as a way for agencies to incorporate the social benefits of reducing CH_4 and N_2O emissions into benefit-cost analyses of regulatory actions that have small, or ''marginal,'' impacts on cumulative global emissions.[83]

The methodology and estimates described in the addendum have undergone multiple stages of peer review and their use in regulatory analysis has been subject to public comment. The estimates are presented with an acknowledgement of the limitations and uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts, just as the IWG has committed to do for the SC-CO_2. OMB has determined that the use of the Marten *et al.* estimates in regulatory analysis is consistent with the requirements of OMB's Information Quality Guidelines Bulletin for Peer Review and OMB Circular A–4.

The SC-CH_4 and SC-N_2O estimates are presented in Table IV.15. Following the same approach as with the SC-CO_2, values for 2010, 2020, 2030, 2040, and 2050 are calculated by combining all outputs from all scenarios and models for a given discount rate. Values for the years in between are calculated using linear interpolation. The full set of annual SC-CH_4 and SC-N_2O estimates between 2010 and 2050 is reported in appendix 14A of the final rule TSD. DOE derived values after 2050 based on the trend in 2010–2050 in each of the four cases in the IWG addendum.

[82] Marten, A.L., Kopits, E.A., Griffiths, C.W., Newbold, S.C., and A. Wolverton. 2015. Incremental CH_4 and N_2O Mitigation Benefits Consistent with the U.S. Government's SC-CO_2 Estimates. *Climate Policy.* 15(2): 272–298 (published online, 2014).

[83] U.S. Government—IWG on Social Cost of GHGs. Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide. August 2016. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf.*

TABLE IV.15—ANNUAL SC-CH_4 AND SC-N_2O ESTIMATES FROM 2016 IWG ADDENDUM

[2007$ per metric ton]

Year	SC-CH_4				SC-N_2O			
	Discount rate and statistic				Discount rate and statistic			
	5%	3%	2.5%	3%	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile	Average	Average	Average	95th percentile
2010	370	870	1,200	2,400	3,400	12,000	18,000	31,000
2015	450	1,000	1,400	2,800	4,000	13,000	20,000	35,000
2020	540	1,200	1,600	3,200	4,700	15,000	22,000	39,000
2025	650	1,400	1,800	3,700	5,500	17,000	24,000	44,000
2030	760	1,600	2,000	4,200	6,300	19,000	27,000	49,000
2035	900	1,800	2,300	4,900	7,400	21,000	29,000	55,000
2040	1,000	2,000	2,600	5,500	8,400	23,000	32,000	60,000
2045	1,200	2,300	2,800	6,100	9,500	25,000	34,000	66,000
2050	1,300	2,500	3,100	6,700	11,000	27,000	37,000	72,000

DOE multiplied the CH_4 and N_2O emissions reduction estimated for each year by the SC-CH_4 and SC-N_2O estimates for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SC-CH_4 and SC-N_2O estimates in each case. Results for CH_4 and N_2O emissions reduction estimates can be found in section V.B.6 of this document and are included in the costs and benefits for those that contribute to the determination of the economic justification of each TSL level.

3. Social Cost of Other Air Pollutants

As noted previously, DOE estimated how the considered energy conservation standards would reduce site NO_X emissions nationwide and decrease power sector NO_X emissions in those 22 States not affected by the CSAPR.

DOE estimated the monetized value of NO_X emissions reductions from electricity generation using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards.[84] The report includes high and low values for NO_X (as $PM_{2.5}$) for 2020, 2025, and 2030 using discount rates of 3 percent and 7 percent; these values are presented in appendix 14B of the final rule TSD. DOE primarily relied on the low estimates to be conservative.[85] The national average low values for 2020 (in 2015$) are $3,187/ton at 3-percent discount rate and $2,869/ton at 7-percent discount rate. DOE developed values specific to the sector for portable ACs using a method described in appendix 14B of the final rule TSD. For this analysis DOE used linear interpolation to define values for the years between 2020 and 2025 and between 2025 and 2030; for years beyond 2030 the value is held constant.

DOE multiplied the emissions reduction (in tons) in each year by the associated $/ton values, and then discounted each series using discount rates of 3 percent and 7 percent as appropriate.

DOE is evaluating appropriate monetization of reduction in other emissions in energy conservation standards rulemakings. DOE has not included monetization of those emissions in the current analysis.

M. Utility Impact Analysis

The utility impact analysis estimates several effects on the electric power generation industry that would result from the adoption of new or amended energy conservation standards. The utility impact analysis estimates the changes in installed electrical capacity and generation that would result for each TSL. The analysis is based on published output from the NEMS associated with *AEO 2016.* NEMS produces the *AEO* Reference case, as well as a number of side cases that estimate the economy-wide impacts of changes to energy supply and demand. As discussed in section IV.K, DOE is using the *AEO 2016* No-CPP case as a basis for its analysis. For the current analysis, impacts are quantified by comparing the levels of electricity sector generation, installed capacity, fuel consumption and emissions in the *AEO 2016* No-CPP case and various side cases. Details of the methodology are provided in the appendices to chapters 13 and 15 of the final rule TSD.

The output of this analysis is a set of time-dependent coefficients that capture the change in electricity generation, primary fuel consumption, installed capacity and power sector emissions due to a unit reduction in demand for a given end use. These coefficients are multiplied by the stream of electricity savings calculated in the NIA to provide estimates of selected utility impacts of new or amended energy conservation standards.

N. Employment Impact Analysis

DOE considers employment impacts in the domestic economy as one factor in selecting a standard. Employment impacts from new or amended energy conservation standards include both direct and indirect impacts. Direct employment impacts are any changes in the number of employees of manufacturers of the products subject to standards, their suppliers, and related service firms. The MIA addresses those impacts. Indirect employment impacts are changes in national employment that occur due to the shift in

[84] Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See Tables 4A–3, 4A–4, and 4A–5 in the report. The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. *Chamber of Commerce, et al.* v. *EPA, et al.,* Order in Pending Case, 577 U.S. ____ (2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan.

[85] For the monetized NO_X benefits associated with $PM_{2.5}$, the related benefits are primarily based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009), which is the lower of the two EPA central tendencies. Using the lower value is more conservative when making the policy decision concerning whether a particular standard level is economically justified. If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2012), the values would be nearly two-and-a-half times larger. (See chapter 14 of the final rule TSD for citations for the studies mentioned above.)

expenditures and capital investment caused by the purchase and operation of more-efficient appliances. Indirect employment impacts from standards consist of the net jobs created or eliminated in the national economy, other than in the manufacturing sector being regulated, caused by (1) reduced spending by consumers on energy, (2) reduced spending on new energy supply by the utility industry, (3) increased consumer spending on the products to which the new standards apply and other goods and services, and (4) the effects of those three factors throughout the economy.

One method for assessing the possible effects on the demand for labor of such shifts in economic activity is to compare sector employment statistics developed by the Labor Department's BLS. BLS regularly publishes its estimates of the number of jobs per million dollars of economic activity in different sectors of the economy, as well as the jobs created elsewhere in the economy by this same economic activity. Data from BLS indicate that expenditures in the utility sector generally create fewer jobs (both directly and indirectly) than expenditures in other sectors of the economy.[86] There are many reasons for these differences, including wage differences and the fact that the utility sector is more capital-intensive and less labor-intensive than other sectors. Energy conservation standards have the effect of reducing consumer utility bills. Because reduced consumer expenditures for energy likely lead to increased expenditures in other sectors of the economy, the general effect of efficiency standards is to shift economic activity from a less labor-intensive sector (*i.e.,* the utility sector) to more labor-intensive sectors (*e.g.,* the retail and service sectors). Thus, the BLS data suggest that net national employment may increase due to shifts in economic activity resulting from energy conservation standards.

DOE estimated indirect national employment impacts for the standard levels considered in this final rule using an input/output model of the U.S. economy called Impact of Sector Energy Technologies version 4 (ImSET).[87] ImSET is a special-purpose version of the ''U.S. Benchmark National Input-Output'' (I–O) model, which was designed to estimate the national employment and income effects of energy-saving technologies. The ImSET software includes a computer-based I–O model having structural coefficients that characterize economic flows among 187 sectors most relevant to industrial, commercial, and residential building energy use.

DOE notes that ImSET is not a general equilibrium forecasting model, and understands the uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Because ImSET does not incorporate price changes, the employment effects predicted by ImSET may over-estimate actual job impacts over the long run for this rule. Therefore, DOE used ImSET only to generate results for near-term timeframes (2022–2027), where these uncertainties are reduced. For more details on the employment impact analysis, see chapter 16 of the final rule TSD.

V. Analytical Results and Conclusions

The following section addresses the results from DOE's analyses with respect to the considered energy conservation standards for portable ACs. It addresses the TSLs examined by DOE, the projected impacts of each of these levels if adopted as energy conservation standards for portable ACs, and the standards levels that DOE is adopting in this final rule. Additional details regarding DOE's analyses are contained in the final rule TSD supporting this document.

A. Trial Standard Levels (TSLs)

DOE analyzed the benefits and burdens of four TSLs for portable ACs. These TSLs are equal to each of the ELs analyzed by DOE with results presented in this document. Detailed results for TSLs that DOE analyzed are in the final rule TSD.

Table V.1 presents the TSLs and the corresponding ELs, and average EERs and CEERs at each level that DOE has identified for potential new energy conservation standards for portable ACs. TSL 4 represents the maximum technologically feasible (''max-tech'') energy efficiency. TSL 3 consists of an intermediate EL below the max-tech level, corresponding to the single highest efficiency observed in DOE's test sample. TSL 2 represents the maximum available efficiency across the full range of capacities, and TSL 1 represents an intermediate level between the baseline and TSL 2.

TABLE V.1—TRIAL STANDARD LEVELS FOR PORTABLE AIR CONDITIONERS

TSL	EL	EER (Btu/Wh)	CEER (Btu/Wh)
1	1	6.05	5.94
2	2	7.15	7.13
3	3	8.48	8.46
4	4	10.75	10.73

B. Economic Justification and Energy Savings

1. Economic Impacts on Individual Consumers

DOE analyzed the economic impacts on portable ACs consumers by looking at the effects that potential new standards at each TSL would have on the LCC and PBP. DOE also examined the impacts of potential standards on selected consumer subgroups and three sensitivity analyses on energy consumption. These analyses are discussed below.

a. Life-Cycle Cost and Payback Period

In general, higher-efficiency products affect consumers in two ways: (1) Purchase price increases and (2) annual operating costs decrease. Inputs used for calculating the LCC and PBP include total installed costs (*i.e.,* product price plus installation costs), and operating costs (*i.e.,* annual energy use, energy prices, energy price trends, repair costs, and maintenance costs). The LCC calculation also uses product lifetime and a discount rate. Chapter 8 of the final rule TSD provides detailed

[86] See U.S. Department of Commerce—Bureau of Economic Analysis. *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II).* 1997. U.S. Government Printing Office: Washington, DC. Available at *http://www.bea.gov/scb/pdf/regional/perinc/meth/rims2.pdf.*

[87] Livingston, O.V, S.R. Bender, M.J. Scott, and R.W. Schultz. ImSET 4.0: Impact of Sector Energy Technologies Model Description and User's Guide. Pacific Northwest National Laboratory. Richland, WA. PNNL–24563.

information on the LCC and PBP analyses.

Table V.2 through Table V.7 show the LCC and PBP results for the TSLs considered for portable ACs for both sectors, residential and commercial. The LCC results presented in Table V.2 and Table V.3 combined the results for residential and commercial users, which means that DOE had to assign an appropriate weight to the results for each type of user. Using the weighting from the room AC rulemaking,[88] DOE assumed that 87 percent of shipments are to the residential sector and 13 percent are to the commercial sector. In the first of each pair of tables, the simple payback is measured relative to the baseline product (EL 0). In the second table, the impacts are measured relative to the efficiency distribution in the no-new-standards case in the compliance year (see section IV.F of this final rule). Because some consumers purchase products with higher efficiency in the no-new-standards case, the average savings are less than the difference between the average LCC of EL 0 and the average LCC at each TSL. The savings refer only to consumers who are affected by a standard at a given TSL. Those who already purchase a product with efficiency at or above a given TSL are not affected. Consumers for whom the LCC increases at a given TSL experience a net cost.

TABLE V.2—AVERAGE LCC AND PBP RESULTS FOR PORTABLE ACS, RESIDENTIAL SETTING

TSL	EL	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	0	559	119	995	1,554	.....	10
1	1	588	106	892	1,480	2.3	10
2	2	635	92	769	1,404	2.8	10
3	3	700	78	655	1,355	3.5	10
4	4	733	63	533	1,265	3.1	10

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline (EL 0) product.

TABLE V.3—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PORTABLE ACS, RESIDENTIAL SETTING

TSL	EL	Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	73	9
2	2	108	27
3	3	143	38
4	4	229	34

* The savings represent the average LCC for affected consumers.

TABLE V.4—AVERAGE LCC AND PBP RESULTS FOR PORTABLE ACS, COMMERCIAL SETTING

TSL	EL	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	0	560	246	1,818	2,378	.....	10
1	1	588	221	1,636	2,224	1.2	10
2	2	636	192	1,419	2,055	1.4	10
3	3	701	165	1,218	1,919	1.7	10
4	4	733	135	999	1,732	1.6	10

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline (EL 0) product.

TABLE V.5—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PORTABLE ACS, COMMERCIAL SETTING

TSL	EL	Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	155	3

[88] Room AC Standards Rulemaking, Direct Final Rule, Chapter 8, page 51. April 18, 2011. *http://www.regulations.gov/#!documentDetail;D=EERE-2007-BT-STD-0010-0053.*

TABLE V.5—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PORTABLE ACS, COMMERCIAL SETTING—Continued

TSL	EL	Average LCC savings * (2015$)	Percent of consumers that experience net cost
2	2	238	9
3	3	342	14
4	4	522	12

* The savings represent the average LCC for affected consumers.

TABLE V.6—AVERAGE LCC AND PBP RESULTS FOR PORTABLE ACS, BOTH SECTORS

TSL	EL	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	0	559	135	1,103	1,663	.....	10
1	1	588	122	990	1,578	2.2	10
2	2	635	105	855	1,490	2.6	10
3	3	700	89	729	1,429	3.2	10
4	4	733	73	594	1,327	2.9	10

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline (EL 0) product.

TABLE V.7—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PORTABLE ACS, BOTH SECTORS

TSL	EL	Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	84	8
2	2	125	24
3	3	169	35
4	4	268	31

* The savings represent the average LCC for affected consumers.

As discussed in section IV.E, DOE conducted a sensitivity analysis that assumes consumers use portable ACs 50 percent less than room ACs. For the proposed standard, TSL 2, the average LCC savings for all consumers declines to $35 (from $125) and 42 percent of consumers experience a net cost under the sensitivity analysis (from 24 percent). See appendix 8F and 10E of the final rule TSD for additional information.

b. Consumer Subgroup Analysis

In the consumer subgroup analysis, DOE estimated the impact of the considered TSLs on low-income households, senior-only households, and small businesses. Table V.8 compares the average LCC savings and PBP at each EL for the three consumer subgroups, along with the average LCC savings for the entire sample. In most cases, the average LCC savings and PBP for low-income households, senior-only households, and small businesses at the considered ELs are not substantially different from the average for all households. Chapter 11 of the final rule TSD presents the complete LCC and PBP results for the subgroups.

TABLE V.8—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND ALL HOUSEHOLDS PLUS LIGHT-COMMERCIAL ESTABLISHMENTS

TSL	Average life-cycle cost savings (2015$)				Simple payback period (years)			
	Low-income households	Senior-only households	Small businesses	Both sectors	Low-income households	Senior-only households	Small businesses	Both sectors
1	96	72	143	84	1.9	2.3	1.2	2.2
2	142	106	218	125	2.3	2.8	1.4	2.6
3	195	141	312	169	2.9	3.5	1.7	3.2
4	304	226	477	268	2.6	3.2	1.6	2.9

c. Rebuttable Presumption Payback

As discussed in section III.E.2, EPCA establishes a rebuttable presumption that an energy conservation standard is economically justified if the increased purchase cost for a product that meets the standard is less than three times the value of the first-year energy savings resulting from the standard. In calculating a rebuttable presumption PBP for each of the considered TSLs, DOE used point values, and, as required by EPCA, based the energy use calculation on the DOE test procedure for portable ACs. In contrast, the PBPs presented in section V.B.1.a were calculated using distributions for input values, with energy use based on field metering studies and RECS data.

Table V.9 presents the rebuttable-presumption PBP for the considered TSLs for portable ACs. While DOE examined the rebuttable-presumption criterion, it considered whether the standard levels considered for the final rule are economically justified through a more detailed analysis of the economic impacts of those levels, pursuant to 42 U.S.C. 6295(o)(2)(B)(i), that considers the full range of impacts to the consumer, manufacturer, Nation, and environment. The results of that analysis serve as the basis for DOE to definitively evaluate the economic justification for a potential standard level, thereby supporting or rebutting the results of any preliminary determination of economic justification. Table V.9 shows the rebuttable presumption PBPs for the considered TSLs for portable ACs.

TABLE V.9—PORTABLE AIR CONDITIONERS: REBUTTABLE PBPS

[Years]

	Trial standard level			
	1	2	3	4
Residential	1.7	2.1	2.6	2.3
Commercial	2.3	2.8	3.4	3.1
Both sectors	1.8	2.2	2.7	2.4

2. Economic Impacts on Manufacturers

DOE performed an MIA to estimate the impact of new energy conservation standards on portable AC manufacturers. The next section describes the expected impacts on manufacturers at each considered TSL. Chapter 12 of the final rule TSD explains the analysis in further detail.

a. Industry Cash Flow Analysis Results

The following tables illustrate the estimated financial impacts (represented by changes in INPV) of new energy conservation standards on portable AC manufacturers, as well as the conversion costs that DOE estimates manufacturers would incur at each TSL. To evaluate the range of cash-flow impacts on the portable AC manufacturing industry, DOE used two different markup scenarios to model the range of anticipated market responses to new energy conservation standards.

To assess the lower (less severe) end of the range of potential impacts, DOE modeled a preservation of gross margin percentage markup scenario, in which a flat markup of 1.42 (*i.e.,* the baseline manufacturer markup) is applied across all ELs. In this scenario, DOE assumed that a manufacturer's absolute dollar markup would increase as production costs increase in the new energy conservation standards case. During interviews, manufacturers have indicated that it is optimistic to assume that they would be able to maintain the same gross margin markup as their production costs increase in response to a new energy conservation standard, particularly at higher TSLs.

To assess the higher (more severe) end of the range of potential impacts, DOE modeled the preservation of per-unit operating profit markup scenario, which assumes that manufacturers would not be able to preserve the same overall gross margin, but instead would cut their markup for minimally compliant products to maintain a cost-competitive product offering while maintaining the same overall level of operating profit in absolute dollars as in the no-new-standards case. The two tables below show the range of potential INPV impacts for manufacturers of portable ACs. Table V.10 reflects the lower bound of impacts (higher profitability) and Table V.11 represents the upper bound of impacts (lower profitability).

Each scenario results in a unique set of cash flows and corresponding industry values at each TSL. In the following discussion, the INPV results refer to the sum of discounted cash flows through 2051, the difference in INPV between the no-new-standards case and each standards case, and the total industry conversion costs required for each standards case.

TABLE V.10—MANUFACTURER IMPACT ANALYSIS UNDER THE PRESERVATION OF GROSS MARGIN PERCENTAGE MARKUP SCENARIO FOR ANALYSIS PERIOD

[2017–2051]

	Units	No-new-standards case	Trial standard level			
			1	2	3	4
INPV	2015$ Millions	738.5	684.7	526.1	406.5	373.0
Change in INPV	2015$ Millions		(53.8)	(212.4)	(332.0)	(365.5)
	(%)		(7.3%)	(28.8%)	(45.0%)	(49.5%)
Free Cash Flow (2021)	2015$ Millions	50.5	16.1	(78.6)	(153.4)	(173.0)
Change in Free Cash Flow (2021)	(%)		(68.0%)	(255.5%)	(403.6%)	(442.3%)
Product Conversion Costs	2015$ Millions		33.1	124.4	179.0	192.2
Capital Conversion Costs	2015$ Millions		52.3	196.5	314.3	344.5
Total Conversion Costs	2015$ Millions		85.5	320.9	493.3	536.7

Parentheses indicate negative (−) values.

TABLE V.11—MANUFACTURER IMPACT ANALYSIS UNDER THE PRESERVATION OF PER-UNIT OPERATING PROFIT MARKUP SCENARIO FOR ANALYSIS PERIOD

[2017–2051]

	Units	No-new-standards case	Trial standard level			
			1	2	3	4
INPV	2015$ Millions	738.5	676.8	485.1	324.7	248.1
Change in INPV	2015$ Millions		(61.8)	(253.4)	(413.9)	(490.4)
	(%)		(8.4%)	(34.3%)	(56.0%)	(66.4%)
Free Cash Flow (2021)	2015$ Millions	50.5	16.1	(78.6)	(153.4)	(173.0)
Change in Free Cash Flow (2021)	(%)		(68.0%)	(255.5%)	(403.6%)	(442.3%)
Product Conversion Costs	2015$ Millions		33.1	124.4	179.0	192.2
Capital Conversion Costs	2015$ Millions		52.3	196.5	314.3	344.5
Total Conversion Costs	2015$ Millions		85.5	320.9	493.3	536.7

Parentheses indicate negative (−) values.

Beyond impacts on INPV, DOE includes a comparison of free cash flow between the no-new-standards case and the standards case at each TSL in the year before new standards take effect to provide perspective on the short-run cash flow impacts in the discussion of the results below.

At TSL 1, DOE estimates the impact on INPV for manufacturers of portable ACs to range from −$61.8 million to −$53.8 million, or a decrease in INPV of 8.4 percent to 7.3 percent, under the preservation of per-unit operating profit markup scenario and the preservation of gross margin percentage markup scenario, respectively. At this TSL, industry free cash flow is estimated to decrease by approximately 68.0 percent to $16.1 million, compared to the no-new-standards case value of $50.5 million in 2021, the year before the projected compliance date.

At TSL 1, the industry as a whole is expected to incur $33.1 million in product conversion costs attributed to upfront research, development, testing, and certification, as well as $52.3 million in one-time investments in property, plant, and equipment (PP&E) necessary to manufacture updated platforms. The industry conversion cost burden at TSL 1 would be associated with updates for portable ACs sold in the U.S. that are currently at the baseline, approximately 22 percent of platforms and 37 percent of shipments. At TSL 1, roughly 67 percent of non-compliant platforms will require some new components, including larger heat exchangers (with increases in heat exchanger area of up to 20 percent), which may necessitate larger chassis sizes. The remaining non-compliant portable ACs will likely require a complete platform redesign, necessitating all new components and high associated re-tooling and R&D costs.

At TSL 2, DOE estimates the impact on INPV for manufacturers of portable ACs to range from −$253.4 million to −$212.4 million, or a decrease in INPV of 34.3 percent to 28.8 percent, under the preservation of per-unit operating profit markup scenario and the preservation of gross margin percentage markup scenario, respectively. At this TSL, industry free cash flow is estimated to decrease by approximately 255.5 percent to −$78.6 million, compared to the no-new-standards case value of $50.5 million in 2021, the year before the projected compliance date.

At TSL 2, the industry as a whole is expected to incur $124.4 million in product conversion costs associated with the upfront research, development, testing, and certification; as well as $196.5 million in one-time investments in PP&E for products requiring platform updates. The industry conversion cost burden at this TSL would be associated with updates for portable ACs sold in the U.S. that are currently below the EL corresponding to TSL 2, approximately 83 percent of platforms and 85 percent of shipments. At TSL 2, roughly 67 percent of non-compliant platforms will require some new components, including larger heat exchangers (with increases in heat exchanger area of up to 20 percent), which may necessitate larger chassis sizes. The remaining non-compliant portable ACs will likely require a complete platform redesign, necessitating all new components and high associated re-tooling and R&D costs.

At TSL 3, DOE estimates the impact on INPV for manufacturers of portable ACs to range from −$413.9 million to −$332.0 million, or a decrease in INPV of 56.0 percent to 45.0 percent, under the preservation of per-unit operating profit markup scenario and the preservation of gross margin percentage markup scenario, respectively. At this TSL, industry free cash flow is estimated to decrease by approximately 403.6 percent to −$153.4 million, compared to the no-new-standards case value of $50.5 million in 2021, the year before the projected compliance date.

At TSL 3, the industry as a whole is expected to incur $179.0 million in product conversion costs associated with the upfront research, development, testing, and certification; as well as $314.3 million in one-time investments in PP&E for products requiring platform redesigns. Again, the industry conversion cost burden at this TSL would be associated with updates for portable ACs sold in the U.S. that are currently below the EL corresponding to TSL 3, approximately 98 percent of platforms and 98 percent of shipments. At TSL 3, roughly 14 percent of non-compliant platforms will require some new components, including larger heat exchangers (with increases in heat exchanger area of up to 20 percent), which may necessitate larger chassis sizes. The remaining 86 percent of non-compliant portable ACs will likely require a complete platform redesign, necessitating all new components and high associated re-tooling and R&D costs.

At TSL 4, DOE estimates the impact on INPV for manufacturers of portable ACs to range from −$490.4 million to −$365.5 million, or a decrease in INPV of 66.4 percent to 49.5 percent, under the preservation of per-unit operating profit markup scenario and the preservation of gross margin percentage markup scenario, respectively. At this TSL, industry free cash flow is estimated to decrease by approximately 442.3 percent to −$173.0 million, compared to the base-case value of $50.5 million in 2021, the year before the projected compliance date.

At TSL 4, the industry as a whole is expected to spend $192.2 million in product conversion costs associated with the research and development and

testing and certification, as well as $344.5 million in one-time investments in PP&E for complete platform redesigns. The industry conversion cost burden at this TSL would be associated with updates for portable ACs sold in the U.S. that are currently below the EL corresponding to TSL 4, estimated to be 100 percent of platforms and shipments. At TSL 4, all of the non-compliant portable ACs will likely require a complete platform redesign, necessitating all new components and high associated re-tooling and R&D costs.

b. Impacts on Employment

To quantitatively assess the impacts of energy conservation standards on direct employment, DOE used the GRIM to estimate the domestic labor expenditures and number of production and non-production employees in the no-new-standards case and at each TSL. DOE used statistical data from the U.S. Census Bureau's 2014 *Annual Survey of Manufactures* (*ASM*),[89] results of the engineering analysis, and manufacturer feedback to calculate industry-wide labor expenditures and direct domestic employment levels.

Labor expenditures related to product manufacturing depend on the labor intensity of the product, the sales volume, and an assumption that wages remain fixed in real terms over time. The total labor expenditures in each year are calculated by multiplying the MPCs by the labor percentage of MPCs. The total labor expenditures in the GRIM were then converted to domestic production employment levels. To do this, DOE relied on the Production Workers Annual Wages, Production Workers Annual Hours, Total Fringe Benefits, Annual Payroll, Production Workers Average for Year, and Number of Employees from the *ASM* to convert total labor expenditure to total production employees.

The total production employees is then multiplied by the U.S. labor percentage to convert total production employment to total domestic production employment. The U.S. labor percentage represents the industry fraction of domestic manufacturing production capacity for the covered product. This value is derived from manufacturer feedback, product database analysis, and publicly available information.

However, DOE estimates that none of the portable ACs subject to the standards considered in this final rule analysis (single-duct and dual-duct portable ACs) are produced domestically. Therefore, DOE does not provide an estimate of direct employment impacts. Indirect employment impacts in the broader U.S. economy are documented in chapter 16 of the final rule TSD.

c. Impacts on Manufacturing Capacity

As noted in the previous section, no single-duct or dual-duct portable ACs are manufactured in the U.S. Therefore, new energy conservation standards would have no impact on U.S. production capacity.

d. Impacts on Subgroups of Manufacturers

The Small Business Administration (SBA) defines a ''small business'' as having 1,250 employees or less for North American Industry Classification System (NAICS) 333415 (''Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing''). Based on this SBA employee threshold, DOE identified one entity involved in the design and distribution of portable ACs in the U.S. that qualifies as a small business. Based upon available information, DOE does not believe that this company is a manufacturer. However, even if this small business does manufacture portable ACs, because the product sold by this company incorporates the highest-efficiency variable-speed compressor currently available on the market, DOE believes that the product will comply with the standard EL adopted in this final rule (EL 2). Therefore, DOE believes that costs for this company would be limited to testing, certification, and updates to marketing materials and product literature. For a discussion of the potential impacts on the small manufacturer subgroup, see section VI.B of this document and chapter 12 of the TSD.

e. Cumulative Regulatory Burden

One aspect of assessing manufacturer burden involves looking at the cumulative impact of multiple DOE standards and the product-specific regulatory actions of other Federal agencies that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook this cumulative regulatory burden. In addition to energy conservation standards, other regulations can significantly affect manufacturers' financial operations. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

Some portable AC manufacturers also make other products or equipment that could be subject to energy conservation standards set by DOE. DOE looks at the regulations that could affect portable AC manufacturers that will take effect approximately 3 years before and after the 2022 compliance date of the standards established in this final rule.

The compliance dates and expected industry conversion costs of relevant energy conservation standards are indicated in Table V.12. Included in the table are Federal regulations that have compliance dates 3 years before and after the portable AC compliance date (and also 8 years before the portable AC compliance date).

TABLE V.12—OTHER ENERGY CONSERVATION STANDARDS RULEMAKINGS AFFECTING THE PORTABLE AC INDUSTRY

Federal energy conservation standard	Number of manufacturers *	Number of manufacturers in portable ACs rule **	Approx. standards year	Industry conversion costs (millions $)	Industry conversion costs/revenue ***
Dehumidifiers, 81 FR 38338 (June 13, 2016)	30	6	2019	$52.5 million (2014$)	4.5%.
Kitchen Ranges and Ovens, 81 FR 60784 (Sep. 2, 2016)	21	3	2019	$119.2 million (2015$)	less than 1%.
Miscellaneous Refrigeration Products, 81 FR 75194 (October 28, 2016).	48	2	2019	$75.6 million (2015$)	4.9%.
Res. Clothes Washers, 77 FR 32308 (May 31, 2012) †	13	1	2018	$418.5 million (2010$)	2.3%.

[89] Available online at *http://www.census.gov/programs-surveys/asm.html*.

TABLE V.12—OTHER ENERGY CONSERVATION STANDARDS RULEMAKINGS AFFECTING THE PORTABLE AC INDUSTRY—Continued

Federal energy conservation standard	Number of manufacturers *	Number of manufacturers in portable ACs rule **	Approx. standards year	Industry conversion costs (millions $)	Industry conversion costs/revenue ***
PTACs, 80 FR 43162 (July 21, 2015) †	12	3	2017	N/A ‡	N/A ‡.
Microwave Ovens, 78 FR 36316 (June 17, 2013) †	12	2	2016	$43.1 million (2011$)	less than 1%.
External Power Supplies, 79 FR 7846 (February 10, 2014) †.	243	1	2015	$43.4 million (2012$)	2.3%.
Residential Central Air Conditioners and Heat Pumps, 76 FR 37408 (June 27, 2011) †.	45	2	2015	$18.0 million (2009$)	less than 1%.

* This column presents the total number of manufacturers identified in the energy conservation standard rule contributing to cumulative regulatory burden.

** This column presents the number of OEMs producing portable ACs that are also listed as manufacturers in the listed energy conservation standard contributing to cumulative regulatory burden.

*** This column presents conversion costs as a percentage of cumulative revenue for the industry during the conversion period. The conversion period is the timeframe over which manufacturers must make conversion costs investments and lasts from the announcement year of the final rule to the standards year of the final rule. This period typically ranges from 3 to 5 years, depending on the energy conservation standard.

† Consistent with Chapter 12 of the TSD, DOE has assessed whether this rule will have significant impacts on manufacturers that are also subject to significant impacts from other EPCA rules with compliance dates within 3 years of this rule's compliance date. However, DOE recognizes that a manufacturer incurs costs during some period before a compliance date as it prepares to comply, such as by revising product designs and manufacturing processes, testing products, and preparing certifications. As such, to illustrate a broader set of rules that may also create additional burden on manufacturers, DOE has included additional rules with compliance dates that fall within 8 years before the compliance date of this rule by expanding the timeframe of potential cumulative regulatory burden. Note that the inclusion of any given rule in this Table does not indicate that DOE considers the rule to contribute significantly to cumulative impact. DOE has chosen to broaden its list of rules in order to provide additional information about its rulemaking activities. DOE will continue to evaluate its approach to assessing cumulative regulatory burden for use in future rulemakings to ensure that it is effectively capturing the overlapping impacts of its regulations. DOE plans to seek public comment on the approaches it has used here (*i.e.,* both the 3- and 8-year timeframes from the compliance date) in order to better understand at what point in the compliance cycle manufacturers most experience the effects of cumulative and overlapping burden from the regulation of multiple products.

‡ As detailed in the energy conservation standards final rule for PTACs and PTHPs, DOE established amended energy efficiency standards for PTACs at the minimum efficiency level specified in the ANSI/ASHRAE/IES Standard 90.1–2013 for PTACs. For PTHPs, DOE is not amending energy conservation standards, which are already equivalent to the PTHP standards in ANSI/ASHRAE/Illuminating Engineering Society (IES) Standard 90.1–2013. Accordingly, there were no conversion costs associated with amended energy conservation standards for PTACs and PTHPs.

In addition to other Federal energy conservation standards, manufacturers cited potential restrictions on the use of certain refrigerants and State-level refrigerant recovery regulations as sources of cumulative regulatory burden for portable AC manufacturers. For more details, see chapter 12, section 12.7.3, of the final rule TSD.

DOE plans to seek public comment on the approaches it has used here (*i.e.,* both the 3- and 8-year timeframes from the compliance date) in order to better understand at what point in the compliance cycle manufacturers most experience the effects of cumulative and overlapping burden from the regulation of multiple product classes.

3. National Impact Analysis

This section presents DOE's estimates of the NES and the NPV of consumer benefits that would result from each of the TSLs considered as potential new standards.

a. Significance of Energy Savings

To estimate the energy savings attributable to potential standards for portable ACs, DOE compared their energy consumption under the no-new-standards case to their anticipated energy consumption under each TSL. The savings are measured over the entire lifetime of products purchased in the 30-year period that begins in the year of anticipated compliance with new standards (2022–2051). Table V.13 presents DOE's projections of the NES for each TSL considered for portable ACs. The savings were calculated using the approach described in section IV.H.2 of this document.

TABLE V.13—CUMULATIVE NATIONAL ENERGY SAVINGS FOR PORTABLE AIR CONDITIONERS; 30 YEARS OF SHIPMENTS

[2022–2051]

Savings	Trial standard level			
	1	2	3	4
	(Quads)			
Source Energy Savings	0.12	0.47	0.90	1.23
Full Fuel Cycle Energy Savings	0.12	0.49	0.95	1.28

OMB Circular A–4 [90] requires agencies to present analytical results, including separate schedules of the monetized benefits and costs that show the type and timing of benefits and costs. Circular A–4 also directs agencies to consider the variability of key elements underlying the estimates of benefits and costs. For this rulemaking, DOE undertook a sensitivity analysis using 9 years, rather than 30 years of product shipments. The choice of a nine-year period is a proxy for the timeline in EPCA for the review of certain energy conservation standards and potential revision of and compliance with such revised standards.[91] The review timeframe established in EPCA is generally not

[90] OMB, ''Circular A–4: Regulatory Analysis'' (Sept. 17, 2003) (Available at: *http://www.whitehouse.gov/omb/circulars_a004_a-4/*).

[91] Section 325(m) of EPCA requires DOE to review its standards at least once every 6 years, and requires, for certain products, a 3-year period after any new standard is promulgated before compliance is required, except that in no case may any new standards be required within 6 years of the compliance date of the previous standards. While adding a 6-year review to the 3-year compliance period adds up to 9 years, DOE notes that it may undertake reviews at any time within the 6 year period and that the 3-year compliance date may yield to the 6-year backstop. A 9-year analysis period may not be appropriate given the variability that occurs in the timing of standards reviews and the fact that for some consumer products, the compliance period is 5 years rather than 3 years.

synchronized with the product lifetime, product manufacturing cycles, or other factors specific to portable ACs. Thus, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology. The NES sensitivity analysis results based on a nine-year analytical period are presented in Table V.14. The impacts are counted over the lifetime of portable ACs purchased in 2022–2030.

TABLE V.14—CUMULATIVE NATIONAL ENERGY SAVINGS FOR PORTABLE AIR CONDITIONERS; 9 YEARS OF SHIPMENTS

[2022–2030]

Savings	Trial standard level			
	1	2	3	4
	(Quads)			
Source Energy Savings	0.04	0.14	0.25	0.36
Full-Fuel-Cycle Energy Savings	0.04	0.15	0.26	0.38

b. Net Present Value of Consumer Costs and Benefits

DOE estimated the cumulative NPV of the total costs and savings for consumers that would result from the TSLs considered for portable ACs. In accordance with OMB's guidelines on regulatory analysis,[92] DOE calculated NPV using both a 7-percent and a 3-percent real discount rate. Table V.15 shows the consumer NPV results with impacts counted over the lifetime of products purchased in 2022–2051.

TABLE V.15—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR PORTABLE AIR CONDITIONERS; 30 YEARS OF SHIPMENTS

[2022–2051]

Discount rate	Trial standard level			
	1	2	3	4
	(billion 2015$)			
3 percent	0.81	3.06	5.56	7.96
7 percent	0.35	1.25	2.17	3.21

The NPV results based on the aforementioned 9-year analytical period are presented in Table V.16. The impacts are counted over the lifetime of products purchased in 2022–2030. As mentioned previously, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology or decision criteria.

TABLE V.16—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR PORTABLE AIR CONDITIONERS; NINE YEARS OF SHIPMENTS

[2022–2030]

Discount rate	Trial standard level			
	1	2	3	4
	(billion 2015$)			
3 percent	0.34	1.19	1.94	2.96
7 percent	0.19	0.64	1.02	1.59

The results in Table V.16 reflect the use of a default trend to estimate the change in price for portable ACs over the analysis period (see section IV.F.1 of this document). DOE also conducted a sensitivity analysis that considered one scenario with a lower rate of price decline and 50 percent fewer operating hours than the reference case, and one scenario with a higher rate of price decline than the reference case. The results of these alternative cases are presented in appendix 10C of the final rule TSD. In the high-price-decline case, the NPV of consumer benefits is higher than in the default case due to higher energy price trends. In the low-price-decline case, the NPV of consumer benefits is lower than in the default case due to lower energy price trends and the 50 percent fewer operating hours.

[92] OMB. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

c. Indirect Impacts on Employment

DOE expects that new energy conservation standards for portable ACs will reduce energy expenditures for consumers of those products, with the resulting net savings being redirected to other forms of economic activity. These expected shifts in spending and economic activity could affect the demand for labor. As described in section IV.N of this document, DOE used an input/output model of the U.S. economy to estimate indirect

employment impacts of the TSLs that DOE considered. DOE understands that there are uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Therefore, DOE generated results for near-term timeframes (2022–2029), where these uncertainties are reduced.

The results suggest that the adopted standards are likely to have a negligible impact on the net demand for labor in the economy. The net change in jobs is so small that it would be imperceptible in national labor statistics and might be offset by other, unanticipated effects on employment. Chapter 16 of the final rule TSD presents detailed results regarding anticipated indirect employment impacts.

4. Impact on Utility or Performance of Products

As discussed in section IV.C.1.b of this document, DOE has concluded that the standards adopted in this final rule will not lessen the utility or performance of the portable ACs under consideration in this rulemaking. Manufacturers of these products currently offer units that meet or exceed the adopted standards.

5. Impact of Any Lessening of Competition

DOE considered any lessening of competition that would be likely to result from new or amended standards. As discussed in section III.E.1.e, the Attorney General of the United States (Attorney General) is required to determine the impact, if any, of any lessening of competition likely to result from a proposed standard and to transmit such determination in writing to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. To assist the Attorney General in making this determination, DOE provided the DOJ June 2016 ECS with copies of the June 2016 ECS NOPR and the NOPR TSD for review. In its assessment letter responding to DOE, DOJ concluded that the proposed energy conservation standards for portable ACs are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

6. Need of the Nation To Conserve Energy

Enhanced energy efficiency, where economically justified, improves the Nation's energy security, strengthens the economy, and reduces the environmental impacts (costs) of energy production. Reduced electricity demand due to energy conservation standards is also likely to reduce the cost of maintaining the reliability of the electricity system, particularly during peak-load periods. As a measure of this reduced demand, chapter 15 in the final rule TSD presents the estimated reduction in generating capacity, relative to the no-new-standards case, for the TSLs that DOE considered in this rulemaking.

Energy conservation resulting from potential energy conservation standards for portable ACs is expected to yield environmental benefits in the form of reduced emissions of certain air pollutants and GHGs. Table V.17 provides DOE's estimate of cumulative emissions reductions expected to result from the TSLs considered in this rulemaking. The emissions were calculated using the multipliers discussed in section IV.K. DOE reports annual emissions reductions for each TSL in chapter 13 of the final rule TSD.

TABLE V.17—CUMULATIVE EMISSIONS REDUCTION FOR PORTABLE ACS SHIPPED IN 2022–2051

	Trial standard level			
	1	2	3	4
Power Sector Emissions				
CO_2 (*million metric tons*)	6.0	24.2	47.0	63.9
SO_2 (*thousand tons*)	4.1	16.2	31.3	42.7
NO_X (*thousand tons*)	3.1	12.3	23.9	32.5
Hg (*tons*)	0.01	0.06	0.12	0.16
CH_4 (*thousand tons*)	0.6	2.5	4.9	6.7
N_2O (*thousand tons*)	0.09	0.36	0.70	0.95
Upstream Emissions				
CO_2 (*million metric tons*)	0.3	1.4	2.6	3.6
SO_2 (*thousand tons*)	0.04	0.16	0.30	0.41
NO_X (*thousand tons*)	4.9	19.8	38.6	52.4
Hg (*tons*)	0.00	0.00	0.00	0.00
CH_4 (*thousand tons*)	30.4	122.3	238.0	323.2
N_2O (*thousand tons*)	0.00	0.01	0.02	0.02
Total FFC Emissions				
CO_2 (*million metric tons*)	6.4	25.6	49.6	67.5
SO_2 (*thousand tons*)	4.1	16.4	31.6	43.1
NO_X (*thousand tons*)	8.0	32.2	62.5	85.0
Hg (*tons*)	0.01	0.06	0.12	0.16
CH_4 (*thousand tons*)	31.1	124.8	242.9	329.8
CH_4 (*thousand tons CO_2eq*) *	870	3,495	6,801	9,235
N_2O (*thousand tons*)	0.09	0.37	0.71	0.97
N_2O (*thousand tons CO_2eq*) *	24.3	97.5	188.9	257.1

* CO_2eq is the quantity of CO_2 that would have the same GWP.

As part of the analysis for this rule, DOE estimated monetary benefits likely to result from the reduced emissions of CO_2 that DOE estimated for each of the considered TSLs for portable ACs. As discussed in section IV.L of this document, for CO_2, DOE used the most recent values for the SC-CO_2 developed by an interagency process. The four sets of SC-CO_2 values correspond to the average values from distributions that use a 5-percent discount rate, a 3-percent discount rate, and a 2.5-percent discount rate, and the 95th-percentile values from a distribution that uses a 3-percent discount rate. The actual SC-CO_2 values used for emissions in each year are presented in appendix 14A of the final rule TSD.

Table V.18 presents the global value of CO_2 emissions reductions at each TSL. For each of the four cases, DOE calculated a present value of the stream of annual values using the same discount rate that was used in the studies upon which the dollar-per-ton values are based. DOE calculated domestic values as a range from 7 percent to 23 percent of the global values; these results are presented in chapter 14 of the final rule TSD.

TABLE V.18—PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR PORTABLE ACS SHIPPED IN 2022–2051

TSL	SC-CO_2 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
Total FFC Emissions				
1	45.9	208	330	635
2	182	829	1,316	2,529
3	347	1,595	2,535	4,866
4	477	2,182	3,464	6,656

As discussed in section IV.L.2, DOE estimated monetary benefits likely to result from the reduced emissions of CH_4 and N_2O that DOE estimated for each of the considered TSLs for portable ACs. DOE used the recent values for the SC-CH_4 and SC-N_2O developed by the interagency working group.

Table V.19 presents the value of the CH_4 emissions reduction at each TSL, and Table V.20 presents the value of the N_2O emissions reduction at each TSL.

TABLE V.19—PRESENT VALUE OF METHANE EMISSIONS REDUCTION FOR PORTABLE ACS SHIPPED IN 2022–2051

TSL	SC-CH_4 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	9.9	31.2	44.2	83.2
2	39.5	125.0	177.2	333.4
3	76.0	242.3	343.9	646.1
4	104.1	329.9	467.8	879.7

TABLE V.20—PRESENT VALUE OF NITROUS OXIDE EMISSIONS REDUCTION FOR PORTABLE ACS SHIPPED IN 2022–2051

TSL	SC-N_2O case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	0.2	1.0	1.6	2.8
2	1.0	4.1	6.5	11.0
3	1.9	7.9	12.5	21.1
4	2.6	10.8	17.1	28.8

DOE is well aware that scientific and economic knowledge about the contribution of CO_2 and other GHG emissions to changes in the future global climate and the potential resulting damages to the world economy continues to evolve rapidly. Thus, any value placed on reduced CO_2 emissions in this rulemaking is subject to change. DOE, together with other Federal agencies, will continue to review various methodologies for estimating the monetary value of reductions in CO_2 and other GHG emissions. This ongoing review will consider the comments on this subject that are part of the public record for this and other rulemakings, as well as other methodological assumptions and issues. Consistent with DOE's legal obligations, and taking into account the uncertainty involved with this particular issue, DOE has included in this rule the most recent values and analyses resulting from the interagency review process. DOE notes, however, that the adopted standards would be economically justified, as defined by

EPCA, even without inclusion of monetized benefits of reduced GHG emissions.

DOE also estimated the monetary value of the economic benefits associated with NO_X emissions reductions anticipated to result from the considered TSLs for portable ACs. The dollar-per-ton values that DOE used are discussed in section IV.L of this document. Table V.21 presents the present values for NO_X emissions reduction for each TSL calculated using 7-percent and 3-percent discount rates. This table presents results that use the low dollar-per-ton values, which reflect DOE's primary estimate. Results that reflect the range of NO_X dollar-per-ton values are presented in Table V.21.

TABLE V.21—PRESENT VALUE OF NO_X EMISSIONS REDUCTION FOR PORTABLE ACS SHIPPED IN 2022–2051 *

TSL	3% Discount rate	7% Discount rate
	(million 2015$)	
Total FFC Emissions		
1	14.1	5.8
2	55.8	22.6
3	106.6	42.4
4	146.5	59.0

* Results are based on the low benefit-per-ton values.

7. Other Factors

The Secretary of Energy, in determining whether a standard is economically justified, may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII)) No other factors were considered in this analysis.

8. Summary of National Economic Impacts

Table V.22 presents the NPV values that result from adding the estimates of the potential economic benefits resulting from reduced GHG and NO_X emissions to the NPV of consumer savings calculated for each TSL considered in this rulemaking.

TABLE V.22—CONSUMER NPV COMBINED WITH PRESENT VALUE OF BENEFITS FROM EMISSIONS REDUCTIONS

TSL	Consumer NPV at 3% discount rate added with:			
	GHG 5% discount rate, average case	3% Discount rate, average case	GHG 2.5% discount rate, average case	GHG 3% discount rate, 95th percentile case
	(billion 2015$)			
1	0.9	1.1	1.2	1.5
2	3.3	4.1	4.6	6.0
3	6.1	7.5	8.6	11.2
4	8.7	10.6	12.1	15.7
TSL	Consumer NPV at 7% discount rate added with:			
	GHG 5% discount rate, average case	GHG 3% discount rate, average case	GHG 3% discount rate, average case	GHG 3% discount rate, 95th percentile case
	(billion 2015$)			
1	0.4	0.6	0.7	1.1
2	1.5	2.2	2.8	4.2
3	2.6	4.1	5.1	7.7
4	3.9	5.8	7.2	10.8

Note: The GHG benefits include the estimated benefits for reductions in CO_2, CH_4, and N_2O emissions using the four sets of SC-CO_2, SC-CH_4, and SC-N_2O values developed by the IWG.

The national operating cost savings are domestic U.S. monetary savings that occur as a result of purchasing the covered portable ACs, and are measured for the lifetime of products shipped in 2022–2051. The benefits associated with reduced GHG emissions achieved as a result of the adopted standards are also calculated based on the lifetime of portable ACs shipped in 2022–2051. However, the GHG reduction is a benefit that accrues globally. Because CO_2 emissions have a very long residence time in the atmosphere, the SC-CO_2 values for future emissions reflect climate-related impacts that continue through 2300.

C. Conclusion

When considering new or amended energy conservation standards, the standards that DOE adopts for any type (or class) of covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering the seven

statutory factors discussed previously. (42 U.S.C. 6295(o)(2)(B)(i)) The new or amended standard must also result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

For this final rule, DOE considered the impacts of potential new standards for portable ACs at each TSL, beginning with the maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest EL that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader as DOE discusses the benefits and/or burdens of each TSL, tables in this section present a summary of the results of DOE's quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers who may be disproportionately affected by a national standard and impacts on employment.

DOE also notes that the economics literature provides a wide-ranging discussion of how consumers trade off upfront costs and energy savings in the absence of government intervention. Much of this literature attempts to explain why consumers appear to undervalue energy efficiency improvements. There is evidence that consumers undervalue future energy savings as a result of (1) a lack of information; (2) a lack of sufficient salience of the long-term or aggregate benefits; (3) a lack of sufficient savings to warrant delaying or altering purchases; (4) excessive focus on the short term, in the form of inconsistent weighting of future energy cost savings relative to available returns on other investments; (5) computational or other difficulties associated with the evaluation of relevant tradeoffs; and (6) a divergence in incentives (for example, between renters and owners, or builders and purchasers). Having less than perfect foresight and a high degree of uncertainty about the future, consumers may trade off these types of investments at a higher than expected rate between current consumption and uncertain future energy cost savings.

In DOE's current regulatory analysis, potential changes in the benefits and costs of a regulation due to changes in consumer purchase decisions are included in two ways. First, if consumers forego the purchase of a product in the standards case, this decreases sales for product manufacturers, and the impact on manufacturers attributed to lost revenue is included in the MIA. Second, DOE accounts for energy savings attributable only to products actually used by consumers in the standards case; if a standard decreases the number of products purchased by consumers, this decreases the potential energy savings from an energy conservation standard. DOE provides estimates of shipments and changes in the volume of product purchases in chapter 9 of the final rule TSD. However, DOE's current analysis does not explicitly control for heterogeneity in consumer preferences, preferences across subcategories of products or specific features, or consumer price sensitivity variation according to household income.[93]

While DOE is not prepared at present to provide a fuller quantifiable framework for estimating the benefits and costs of changes in consumer purchase decisions due to an energy conservation standard, DOE is committed to developing a framework that can support empirical quantitative tools for improved assessment of the consumer welfare impacts of appliance standards. DOE has posted a paper that discusses the issue of consumer welfare impacts of appliance energy conservation standards, and potential enhancements to the methodology by which these impacts are defined and estimated in the regulatory process.[94] DOE welcomes comments on how to more fully assess the potential impact of energy conservation standards on consumer choice and how to quantify this impact in its regulatory analysis in future rulemakings.

1. Benefits and Burdens of TSLs Considered for Portable AC Standards

Table V.23 and Table V.24 summarize the quantitative impacts estimated for each TSL for portable ACs. The national impacts are measured over the lifetime of portable ACs purchased in the 30-year period that begins in the anticipated year of compliance with new standards (2022–2051). The energy savings, emissions reductions, and value of emissions reductions refer to full-fuel-cycle results. The ELs contained in each TSL are described in section V.A of this document.

[93] P.C. Reiss and M.W. White. Household Electricity Demand, Revisited. *Review of Economic Studies.* 2005. 72(3): pp. 853–883. doi: 10.1111/0034–6527.00354.

[94] Sanstad, A.H. *Notes on the Economics of Household Energy Consumption and Technology Choice.* 2010. LBNL. *https://www1.eere.energy.gov/buildings/appliance_standards/pdfs/consumer_ee_theory.pdf.*

TABLE V.23—SUMMARY OF ANALYTICAL RESULTS FOR PORTABLE ACS TSLS: NATIONAL IMPACTS
[2022–2051]

Category	TSL 1	TSL 2	TSL 3	TSL 4
Cumulative FFC National Energy Savings (quads)				
Quads	0.12	0.49	0.95	1.28.
NPV of Consumer Costs and Benefits (billion 2015$)				
3% discount rate	0.81	3.06	5.56	7.96.
7% discount rate	0.35	1.25	2.17	3.21.
Cumulative FFC Emissions Reduction (Total FFC Emission)				
CO_2 (*million metric tons*)	6.4	25.6	49.6	67.5.
SO_2 (*thousand tons*)	4.1	16.4	31.6	43.1.
NO_X (*thousand tons*)	8.0	32.2	62.5	85.0.
Hg (*tons*)	0.01	0.06	0.12	0.16.
CH_4 (*thousand tons*)	31.1	124.8	242.9	329.8.
N_2O (*thousand tons*)	0.09	0.37	0.71	0.97.
Value of Emissions Reduction (Total FFC Emissions)				
CO_2 (*billion 2015$*) **	0.046 to 0.635	0.182 to 2.529	0.347 to 4.866	0.477 to 6.656.
NO_X—3% discount rate (*million 2015$*)	14.1	55.8	106.6	146.5.
NO_X—7% discount rate (*million 2015$*)	5.8	22.6	42.4	59.0.

* Range of the economic value of CO_2 reductions is based on estimates of the global benefit of reduced CO_2 emissions.

TABLE V.24—SUMMARY OF ANALYTICAL RESULTS FOR PORTABLE ACS TSLS: MANUFACTURER AND CONSUMER IMPACTS

Category	TSL 1 *	TSL 2 *	TSL 3 *	TSL 4 *
Manufacturer Impacts				
Industry NPV (*million 2015$*) (No-new-standards case INPV = 738.5.	676.8 to 684.7	485.1 to 526.1	324.7 to 406.5	248.1 to 373.0.
Industry NPV (*% change*)	(8.4%) to (7.3%)	(34.3%) to (28.8%)	(56.0%) to (45.0%)	(66.4%) to (49.5%).
Consumer Average LCC Savings (2015$)				
Residential	73	108	143	229.
Commercial	155	238	342	522.
Both Sectors	84	125	169	268.
Consumer Simple PBP (years)				
Residential	2.3	2.8	3.5	3.1.
Commercial	1.2	1.4	1.7	1.6.
Both Sectors	2.2	2.6	3.2	2.9.
Percent of Consumers that Experience a Net Cost				
Residential	9	27	38	34.
Commercial	3	9	14	12.
Both Sectors	8	24	35	31.

Parentheses indicate negative (−) values. The entry "n.a." means not applicable because there is no change in the standard at certain TSLs.
* Weighted by shares of each product class in total projected shipments in 2022.

DOE first considered TSL 4, which represents the max-tech efficiency level. TSL 4 would save an estimated 1.28 quads of energy, an amount DOE considers significant. Under TSL 4, the NPV of consumer benefit would be $3.21 billion using a discount rate of 7 percent, and $7.96 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 4 are 67.5 Mt of CO_2, 43.1 thousand tons of SO_2, 85.0 thousand tons of NO_X, 0.16 ton of Hg, 329.8 thousand tons of CH_4, and 0.97 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 4 ranges from $477 million to $6,656 million for CO_2, from $104 million to $880 million for CH_4, and from $3 million to $29 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 4 is $59.0 million using a 7-percent discount rate and $146.5 million using a 3-percent discount rate.

At TSL 4, the average LCC impact is a savings of $229 for the residential sector, $522 for the commercial sector, and $268 for both sectors. The simple payback period is 3.1 years for the residential sector, 1.6 years for the commercial sector, and 2.9 years for both sectors. The fraction of consumers experiencing a net LCC cost is 34 percent for the residential sector, 12 percent for the commercial sector, and 31 percent for both sectors.

At TSL 4, the projected change in INPV ranges from a decrease of $490.4 million to a decrease of $365.5 million, which correspond to decreases of 66.4 percent and 49.5 percent, respectively. DOE estimates that no portion of the market will meet the efficiency standard specified by this TSL in 2021, the year before the compliance year. As such, manufacturers would have to redesign all products by the 2022 compliance date to meet demand. Redesigning all units to meet the max-tech efficiency level would require considerable capital and product conversion expenditures. At TSL 4, the capital conversion costs

total as much as $344.5 million, roughly 12.9 times the industry annual ordinary capital expenditure in 2021 (the year leading up to new standards). DOE estimates that complete platform redesigns would cost the industry $192.2 million in product conversion costs. These conversion costs largely relate to the extensive research programs required to develop new products that meet the efficiency standards at TSL 4. These costs are equivalent to 17.0 times the industry annual budget for research and development. As such, the conversion costs associated with the changes in products and manufacturing facilities required at TSL 4 would require significant use of manufacturers' financial reserves (manufacturer capital pools), impacting other areas of business that compete for these resources and significantly reducing INPV. In addition, manufacturers could face a substantial impact on profitability at TSL 4. Because manufacturers are more likely to reduce their margins to maintain a price-competitive product at higher TSLs, DOE expects that TSL 4 would yield impacts closer to the high end of the range of INPV impacts. If the high end of the range of impacts is reached, as DOE expects, TSL 4 could result in a net loss to manufacturers of 66.4 percent of INPV.

Beyond the direct financial impact on manufacturers, TSL 4 may also contribute to the unavailability of portable ACs at certain cooling capacities. The efficiency at TSL 4 is a theoretical level that DOE developed by modeling the most efficient components available. However, DOE is aware that the highest-efficiency compressors that are necessary to meet TSL 4 may not be available to all manufacturers for the full range of capacities of portable ACs. Because specific high-efficiency components available are driven largely by the markets for other products with higher shipments (*e.g.,* room ACs), portable AC manufacturers may be constrained in their design choices. This may have the potential to eliminate portable ACs of certain cooling capacities from the market, should TSL 4 be selected.

The Secretary concludes that at TSL 4 for portable ACs, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on some consumers, and the impacts on manufacturers, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 4 is not economically justified.

DOE then considered TSL 3, which would save an estimated 0.95 quads of energy, an amount DOE considers significant. Under TSL 3, the NPV of consumer benefit would be $2.17 billion using a discount rate of 7 percent, and $5.56 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 3 are 49.6 Mt of CO_2, 31.6 thousand tons of SO_2, 62.5 thousand tons of NO_X, 0.12 tons of Hg, 242.9 thousand tons of CH_4, and 0.71 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 3 ranges from $347 million to $4,866 million for CO_2, from $76 million to $646 million for CH_4, and from $2 million to $21 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 4 is $42.4 million using a 7-percent discount rate and $106.6 million using a 3-percent discount rate.

At TSL 3, the average LCC impact is a savings of $143 for the residential sector, $342 for the commercial sector, and $169 for both sectors. The simple payback period is 3.5 years for the residential sector, 1.7 years for the commercial sector, and 3.2 years for both sectors. The fraction of consumers experiencing a net LCC cost is 38 percent for the residential sector, 14 percent for the commercial sector, and 35 percent for both sectors.

At TSL 3, the projected change in INPV ranges from a decrease of $413.9 million to a decrease of $332.0 million, which correspond to decreases of 56.0 percent and 45.0 percent, respectively. DOE estimates that approximately 2 percent of available platforms and 2 percent of shipments will meet the efficiency standards specified by this TSL in 2021, the year before the compliance year. As such, manufacturers would have to make upgrades to 98 percent of platforms by the 2022 compliance date to meet demand. Redesigning these units to meet the EL would require considerable capital and product conversion expenditures. At TSL 3, the capital conversion costs total as much as $314.3 million, roughly 11.8 times the industry annual ordinary capital expenditure in 2021 (the year leading up to new standards). DOE estimates that complete platform redesigns would cost the industry $179.0 million in product conversion costs. These conversion costs largely relate to the extensive research programs required to develop new products that meet the efficiency standards at TSL 3. These costs are equivalent to 15.8 times the industry annual budget for research and development. As such, the conversion costs associated with the changes in products and manufacturing facilities required at TSL 3 would require significant use of manufacturers' financial reserves (manufacturer capital pools), impacting other areas of business that compete for these resources and significantly reducing INPV. In addition, manufacturers could face a substantial impact on profitability at TSL 3. Because manufacturers are more likely to reduce their margins to maintain a price-competitive product at higher TSLs, especially in the lower-capacity portable segment, DOE expects that TSL 3 would yield impacts closer to the high end of the range of INPV impacts. If the high end of the range of impacts is reached, as DOE expects, TSL 3 could result in a net loss to manufacturers of 56.0 percent of INPV.

Similar to TSL 4, beyond the direct financial impact on manufacturers, TSL 3 may also contribute to the unavailability of portable ACs at certain cooling capacities. TSL 3 is based on the single highest efficiency unit in DOE's test sample. However, DOE believes few, if any, other units on the market are able to achieve these efficiencies and that the highest efficiency single-speed compressors likely necessary to meet TSL 3 may not be available to all manufacturers for the full range of capacities of portable ACs. Because high-efficiency components available at any given time are driven largely by the markets for other products with higher shipments (*e.g.,* room ACs), portable AC manufacturers may be constrained in their design choices. This may have the potential to eliminate portable ACs of certain cooling capacities from the market.

The Secretary concludes that at TSL 3 for portable ACs, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on some consumers, and the impacts on manufacturers, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 3 is not economically justified.

DOE then considered TSL 2, which would save an estimated 0.49 quads of energy, an amount DOE considers significant. Under TSL 2, the NPV of consumer benefit would be $1.25 billion using a discount rate of 7 percent, and $3.06 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 2 are 25.6 Mt of CO_2, 16.4 thousand tons of SO_2, 32.2 thousand tons of NO_X, 0.06 tons of Hg, 124.8 thousand tons of CH_4, and 0.37 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 2 ranges from $182 million to $2,529 million for CO_2, from $40 million to $333 million for CH_4, and from $1 million to $11 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 2 is $22.6 million using a 7-percent discount rate and $55.8 million using a 3-percent discount rate.

At TSL 2, the average LCC impact is a savings of $108 for the residential sector, $238 for the commercial sector, and $125 for both sectors. The simple payback period is 2.8 years for the residential sector, 1.4 years for the commercial sector, and 2.6 years for both sectors. The fraction of consumers experiencing a net LCC cost is 27 percent for the residential sector, 9 percent for the commercial sector, and 24 percent for both sectors.

At TSL 2, the projected change in INPV ranges from a decrease of $253.4 million to a decrease of $212.4 million, which correspond to decreases of 34.3 percent and 28.8 percent, respectively. DOE estimates that approximately 17 percent of available platforms and 15 percent of shipments will meet the efficiency standards specified by this TSL in 2021, the year before the compliance year. As such, manufacturers would have to make upgrades to 83 percent of platforms by the 2022 compliance date to meet demand. At TSL 2, the capital conversion costs total as much as $196.5 million, roughly 7.4 times the industry annual ordinary capital expenditure in 2021 (the year leading up to new standards). DOE estimates that complete platform redesigns would cost the industry $124.4 million in product conversion costs. These conversion costs largely relate to the extensive research programs required to develop new products that meet the efficiency standards at TSL 2. These costs are equivalent to 11.0 times the industry annual budget for R&D. Because manufacturers are more likely to reduce their margins to maintain a price-competitive product at higher TSLs, especially in the lower-capacity portable segment, DOE expects that TSL 2 would yield impacts closer to the high end of the range of INPV impacts. If the high end of the range of impacts is reached, as DOE expects, TSL 2 could result in a net loss to manufacturers of 34.3 percent of INPV.

After considering the analysis and weighing the benefits and burdens, the Secretary has concluded that at TSL 2 for portable ACs, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, the estimated monetary value of the emissions reductions, and positive average LCC savings would outweigh the negative impacts on some consumers and on manufacturers, including the conversion costs that could result in a reduction in INPV for manufacturers. Accordingly, the Secretary has concluded that TSL 2 would offer the maximum improvement in efficiency that is technologically feasible and economically justified, as defined by EPCA, and would result in the significant conservation of energy.

Therefore, based on the above considerations, DOE adopts the energy conservation standards for portable ACs at TSL 2. The new energy conservation standards for portable ACs, which are expressed as CEER as a function of SACC, are shown in Table V.25.

Table V.25 New Energy Conservation Standards for Portable ACs

Portable Air Conditioner Product Class	Minimum CEER (Btu/Wh)
Single-duct and dual-duct portable air conditioners	$Minimum\ CEER = 1.04 \times \frac{SACC}{(3.7117 \times SACC^{0.6384})}$
CEER is Combined Energy Efficiency Ratio in in Btu/Wh Seasonally Adjusted Cooling Capacity (SACC) in Btu/h determined in accordance with Appendix CC	

2. Annualized Benefits and Costs of the Adopted Standards

The benefits and costs of the adopted standards can also be expressed in terms of annualized values. The annualized net benefit is (1) the annualized national economic value (expressed in 2015$) of the benefits from operating products that meet the adopted standards (consisting primarily of operating cost savings from using less energy, minus increases in product purchase costs, and (2) the annualized monetary value of the benefits of GHG and NO_X emission reductions.[95]

Table V.26 shows the annualized values for portable ACs under TSL 2, expressed in 2015$. The results under the primary estimate are as follows.

Using a 7-percent discount rate for benefits and costs other than GHG reductions (for which DOE used average social costs with a 3-percent discount rate),[96] the estimated cost of the adopted standards for portable ACs is $61 million per year in increased equipment costs, while the estimated annual benefits are $202.7 million in reduced equipment operating costs, $56.7 million in GHG reductions, and $2.6 million in reduced NO_X emissions. In this case, the net benefit would amount to $201 million per year.

Using a 3-percent discount rate for all benefits and costs, the estimated cost of the adopted standards for portable ACs is $59 million per year in increased equipment costs, while the estimated annual benefits are $240.0 million in reduced operating costs, $56.7 million in GHG reductions, and $3.3 million in reduced NO_X emissions. In this case, the net benefit amounts to $241 million per year.

[95] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2014, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (2020, 2030, *etc.*), and then discounted the present value from each year to 2015. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year that yields the same present value.

[96] DOE used average social costs with a 3-percent discount rate; these values are considered as the ''central'' estimates by the IWG.

TABLE V.26—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS (TSL 2) FOR PORTABLE ACS *

	Discount rate	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings	7%	202.7	99.1	214.4.
	3%	240.0	116.3	256.1.
CO_2 Reduction (using mean SC-CO_2 at 5% discount rate) **	5%	18.4	8.8	19.9.
CO_2 Reduction (using mean SC-CO_2 at 3% discount rate) **	3%	56.7	27.0	61.4.
CO_2 Reduction (using mean SC-CO_2 at 2.5% discount rate) **	2.5%	81.1	38.6	87.9.
CO_2 Reduction (using 95th percentile SC-CO_2 at 3% discount rate) **	3%	169.9	80.9	184.1.
NO_X Reduction †	7%	2.6	1.2	6.2.
	3%	3.3	1.6	8.1.
Total Benefits ‡	7% plus CO_2 range	224 to 375	213 to 354	240 to 405.
	7%	262	249	282.
	3% plus CO_2 range	262 to 413	248 to 389	284 to 448.
	3%	300	283	326.
Costs				
Consumer Incremental Product Costs	7%	61	61	56.
	3%	59	59	53.
Net Benefits				
Total ‡	7% plus CO_2 range	163 to 314	48 to 120	185 to 349.
	7%	201	67	226.
	3% plus CO_2 range	203 to 354	68 to 140	231 to 395.
	3%	241	86	272.

* This table presents the annualized costs and benefits associated with portable ACs shipped in 2022–2051. These results include benefits to consumers which accrue after 2051 from the portable ACs purchased from 2022–2051. The incremental installed costs include incremental equipment cost as well as installation costs. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy price trends from the *AEO 2016* No-CPP case, a Low Economic Growth case, and a High Economic Growth case, respectively. In addition, incremental product costs reflect a medium decline rate in the Primary Estimate, a low decline rate in the Low Benefits Estimate, and a high decline rate in the High Benefits Estimate. The Low Benefits Estimate reflects a 50-percent reduction in the operating hours relative to the reference case operating hours. The methods used to derive projected price trends are explained in section IV.F of this document. The benefits and costs are based on equipment efficiency distributions as described in sections IV.F.8 and IV.H.1 of this document. Purchases of higher efficiency equipment are a result of many different factors unique to each consumer including past purchases, expected usage, and others. For each consumer, all other factors being the same, it would be anticipated that higher efficiency purchases in the no-new-standards case may correlate positively with higher energy prices. To the extent that this occurs, it would be expected to result in some lowering of the consumer operating cost savings from those calculated in this rule. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

** The interagency group selected four sets of SC-CO_2, SC-CH_4, and SC-N_2O values for use in regulatory analyses. Three sets of values are based on the average social costs from the integrated assessment models, at discount rates of 5 percent, 3 percent, and 2.5 percent. The fourth set, which represents the 95th percentile of the social cost distributions calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the social cost distributions The SC-CO_2 values are emission year specific. See section IV.L.1 of this document for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the ACS study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average social costs with 3-percent discount rate. In the rows labeled ''7% plus GHG range'' and ''3% plus GHG range,'' the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of social cost values.

VI. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Section 1(b)(1) of Executive Order (E.O.) 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), requires each agency to identify the problem that it intends to address, including, where applicable, the failures of private markets or public institutions that warrant new agency action, as well as to assess the significance of that problem. The problems that the adopted standards for portable ACs are intended to address are as follows:

(1) Insufficient information and the high costs of gathering and analyzing relevant information leads some consumers to miss opportunities to make cost-effective investments in energy efficiency.

(2) In some cases the benefits of more efficient equipment are not realized due to misaligned incentives between purchasers and users. An example of such a case is when the equipment purchase decision is made by a building contractor or building owner who does not pay the energy costs.

(3) There are external benefits resulting from improved energy efficiency of products or equipment that are not captured by the users of such equipment. These benefits include externalities related to public health, environmental protection and national energy security that are not reflected in energy prices, such as reduced emissions of air pollutants and GHGs that impact human health and global warming. DOE attempts to qualify some of the external benefits through use of social cost of carbon values.

The Administrator of the Office of Information and Regulatory Affairs (OIRA) in the OMB has determined that the regulatory action in this document is a significant regulatory action under section (3)(f) of E.O. 12866. Accordingly, pursuant to section 6(a)(3)(B) of the Order, DOE has provided to OIRA: (i) The text of the draft regulatory action, together with a reasonably detailed description of the need for the regulatory action and an explanation of how the regulatory action will meet that need; and (ii) an assessment of the potential costs and benefits of the regulatory action, including an explanation of the manner in which the regulatory action is

consistent with a statutory mandate. DOE has included these documents in the rulemaking record.

In addition, the Administrator of OIRA has determined that the regulatory action is an ''economically'' significant regulatory action under section (3)(f)(1) of E.O. 12866. Accordingly, pursuant to section 6(a)(3)(C) of the Order, DOE has provided to OIRA an assessment, including the underlying analysis, of benefits and costs anticipated from the regulatory action, together with, to the extent feasible, a quantification of those costs; and an assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, and an explanation why the planned regulatory action is preferable to the identified potential alternatives. These assessments can be found in the TSD for this rulemaking.

DOE has also reviewed this regulation pursuant to E.O. 13563, issued on January 18, 2011. 76 FR 3281, Jan. 21, 2011. E.O. 13563 is supplemental to and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in E.O. 12866. To the extent permitted by law, agencies are required by E.O. 13563 to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

DOE emphasizes as well that E.O. 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, DOE believes that this final rule is consistent with these principles, including the requirement that, to the extent permitted by law, benefits justify costs.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (IRFA) and a final regulatory flexibility analysis (FRFA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by E.O. 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (Aug. 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website (*http://energy.gov/gc/office-general-counsel*).

DOE reviewed this final rule pursuant to the Regulatory Flexibility Act and the procedures and policies discussed above. Consistent with the June 2016 ECS NOPR, DOE has concluded that this rule would not have a significant impact on a substantial number of small entities. The factual basis for this certification is set forth below.

For manufacturers of portable ACs, the SBA has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. (See 13 CFR part 121.) The size standards are listed by NAICS code and industry description and are available at *www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf.* Manufacturing of portable ACs is classified under NAICS 333415, ''Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing Other Major Household Appliance Manufacturing.'' The SBA sets a threshold of 1,250 employees or fewer for an entity to be considered as a small business for this category.

To estimate the number of companies that could be small business manufacturers of products covered by this rulemaking, DOE conducted a market survey using all available public information. To identify small business manufacturers, DOE surveyed the AHAM membership directory,[97] California Energy Commission's (CEC's) Appliance Database,[98] and individual company websites. DOE screened out companies that did not themselves manufacture products covered by this rulemaking, did not meet the definition of a ''small business,'' or are foreign owned and operated. In the June 2016 ECS NOPR, DOE estimated that there were no domestic manufacturers of portable ACs that meet the SBA's definition of a ''small business.'' DOE subsequently identified one small, domestic business responsible for the design and distribution of a dual-duct portable AC. Based upon available information, DOE does not believe that this company is a manufacturer. Because the product sold by this company incorporates the highest-efficiency variable-speed compressor currently available on the market, DOE believes that the product will comply with the standard EL adopted in this final rule (EL 2). Therefore, DOE does not expect this small business to incur any design or capital-related costs.

This small business may incur costs associated with certification, testing, and marketing updates. The product sold by this company is listed in the CEC's Appliance Database, indicating that this company already allocates a portion of its resources to testing and certification of its portable AC product under ANSI/ASHRAE 128–2001. Preemption of California's standard by the standard adopted in this final rule implies that the small business would divert its existing testing budget to testing according to DOE's test procedure in appendix CC. Testing and certifying under appendix CC would add costs relative to testing to ANSI/ASHRAE 128–2001 due to the dual test condition requirement for dual-duct portable ACs (the product configuration sold by the small business). While DOE does not have third-party test laboratory quotes for portable AC testing costs, DOE expects that the costs would be similar to testing whole-home dehumidifiers [99] because both require ducted test setups within environmentally-controlled chambers. Based on this assumption, DOE estimates that testing of one portable AC

[97] Available at: *https://www.aham.org/AHAM/AuxCurrentMembers.*

[98] Available at: *https://cacertappliances.energy.ca.gov/Pages/ApplianceSearch.aspx.*

[99] Test Procedure Final Rule for Dehumidifiers, 80 FR 45802 (July 31, 2015).

platform under appendix CC may cost an additional $7,000 compared to current testing. Additionally, based on feedback from manufacturers, DOE estimates that updates to marketing materials and product literature for this company may total $3,000. DOE assumes these upfront costs will be spread over a 5-year period leading up to the compliance year. Accordingly, on an annual basis, the estimated upfront product conversion costs equate to less than 1 percent of this entity's annual revenues.

On the basis of the foregoing, DOE certifies that the rule will not have a significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared a FRFA for this rule. DOE has transmitted this certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the SBA for review under 5 U.S.C. 605(b).

Significant Alternatives to the Rule

Additional compliance flexibilities may be available through other means. EPCA provides that a manufacturer of a covered consumer product whose annual gross revenue from all of its operations does not exceed $8 million may apply for an exemption from all or part of an energy conservation standard for a period not longer than 24 months after the effective date of a final rule establishing the standard. (42 U.S.C. 6295(t)) Additionally, section 504 of the Department of Energy Organization Act, 42 U.S.C. 7194, provides authority for the Secretary to adjust a rule issued under EPCA in order to prevent ''special hardship, inequity, or unfair distribution of burdens'' that may be imposed on that manufacturer as a result of such rule. Manufacturers should refer to 10 CFR part 430, subpart E, and part 1003 for additional details.

C. Review Under the Paperwork Reduction Act

DOE has determined that portable ACs are a covered product under EPCA. 81 FR 22514 (April 18, 2016). Because portable ACs are a covered product, manufacturers will need to certify to DOE that their products comply with the energy conservation standards established in this final rule. In certifying compliance, manufacturers must test their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including portable ACs. 76 FR 12422 (Mar. 7, 2011); 80 FR 5099 (Jan. 30, 2015). The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 30 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

Pursuant to the National Environmental Policy Act (NEPA) of 1969, DOE has determined that the rule fits within the category of actions included in Categorical Exclusion (CX) B5.1 and otherwise meets the requirements for application of a CX. (See 10 CFR part 1021, App. B, B5.1(b); 1021.410(b) and App. B, B(1)–(5).) The rule fits within this category of actions because it is a rulemaking that establishes energy conservation standards for consumer products or industrial equipment, and for which none of the exceptions identified in CX B5.1(b) apply. Therefore, DOE has made a CX determination for this rulemaking, and DOE does not need to prepare an Environmental Assessment or Environmental Impact Statement for this rule. DOE's CX determination for this rule is available at *http://energy.gov/nepa/categorical-exclusion-cx-determinations-cx.*

E. Review Under Executive Order 13132

E.O. 13132, ''Federalism,'' 64 FR 43255 (Aug. 10, 1999), imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The E.O. requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The E.O. also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297) Therefore, no further action is required by E.O. 13132.

F. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of E.O. 12988, ''Civil Justice Reform,'' imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. 61 FR 4729 (Feb. 7, 1996). Regarding the review required by section 3(a), section 3(b) of E.O. 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of E.O. 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of E.O. 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects

of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at *http://energy.gov/sites/prod/files/gcprod/documents/umra_97.pdf.*

This final rule does not contain a Federal intergovernmental mandate because it does not require expenditures of $100 million or more in any one year by the private sector. The final rule could result in expenditures of $100 million or more, but there is no requirement that mandates that result. Potential expenditures may include: (1) Investment in R&D and in capital expenditures by portable AC manufacturers in the years between the final rule and the compliance date for the new standards, and (2) incremental additional expenditures by consumers to purchase higher-efficiency portable ACs, starting at the compliance date for the applicable standard.

Section 202 of UMRA authorizes a Federal agency to respond to the content requirements of UMRA in any other statement or analysis that accompanies the final rule. (2 U.S.C. 1532(c)) The content requirements of section 202(b) of UMRA relevant to a private sector mandate substantially overlap the economic analysis requirements that apply under section 325(o) of EPCA and Executive Order 12866. The **SUPPLEMENTARY INFORMATION** section of this document and the TSD for this final rule respond to those requirements.

Under section 205 of UMRA, the Department is obligated to identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a written statement under section 202 is required. (2 U.S.C. 1535(a)) DOE is required to select from those alternatives the most cost-effective and least burdensome alternative that achieves the objectives of the rule unless DOE publishes an explanation for doing otherwise, or the selection of such an alternative is inconsistent with law. This final rule establishes energy conservation standards for portable ACs that are designed to achieve the maximum improvement in energy efficiency that DOE has determined to be both technologically feasible and economically justified, as required by 6295(o)(2)(A) and 6295(o)(3)(B). A full discussion of the alternatives considered by DOE is presented in chapter 17 of the TSD for this final rule.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

Pursuant to Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 18, 1988), DOE has determined that this rule would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under information quality guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA at OMB, a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgates or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy, or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

DOE has concluded that this regulatory action, which sets forth new energy conservation standards for portable ACs, is not a significant energy action because the standards are not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on this final rule.

L. Review Under the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (OSTP), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the Bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are ''influential scientific information,'' which the Bulletin defines as ''scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions.'' *Id.* at 70 FR 2667.

In response to OMB's Bulletin, DOE conducted formal in-progress peer reviews of the energy conservation standards development process and analyses and has prepared a Peer Review Report pertaining to the energy conservation standards rulemaking analyses. Generation of this report involved a rigorous, formal, and documented evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects. The ''Energy Conservation Standards Rulemaking Peer Review Report'' dated February 2007 has been disseminated and is available at the following website: *www.energy.gov/eere/buildings/peer-review.*

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule prior to its effective date. The report will state that it has been determined that the rule is a ''major rule'' as defined by 5 U.S.C. 804(2).

VII. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Reporting and recordkeeping requirements.

10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, and Small businesses.

Issued in Washington, DC, on December 28, 2016.

David J. Friedman,

Acting Assistant Secretary, Energy Efficiency and Renewable Energy.

Note: DOE is publishing this document concerning portable air conditioners to comply with an order from the U.S. District Court for the Northern District of California in the consolidated cases of *Natural Resources Defense Council, et al.* v. *Perry* and *People of the State of California et al.* v. *Perry,* Case No. 17–cv–03404–VC, as affirmed by the U.S. Court of Appeals for the Ninth Circuit in the consolidated cases Nos. 18–15380 and 18–15475. DOE reaffirmed the original signature and date in the Energy Conservation Standards implementation of the court order published elsewhere in this issue of the **Federal Register**. This document is substantively identical to the signed document DOE had previously posted to its website but has been edited and formatted in conformance with the publication requirements for the **Federal Register** and CFR to ensure the document can be given legal effect.

Editorial Note: This document was received for publication by the Office of the Federal Register on December 3, 2019.

For the reasons set forth in the preamble, DOE amends parts 429 and 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, to read as set forth below:

PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 1. The authority citation for Part 429 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 2. Section 429.12 is amended by:

■ a. In paragraph (b)(13), removing ''§§ 429.14 through 429.60'' and adding in its place, ''§§ 429.14 through 429.62''; and

■ b. In paragraph (d), add a new entry to the end of the table to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(d) * * *

* * * * *	
Portable air conditioners	February 1.

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■ 3. Section 429.62 is amended by adding paragraph (b) to read as follows:

§ 429.62 Portable air conditioners.

* * * * *

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to single-duct and dual-duct portable air conditioners; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The combined energy efficiency ratio (CEER in British thermal units per Watt-hour (Btu/Wh)), the seasonally adjusted cooling capacity in British thermal units per hour (Btu/h), the duct configuration (single-duct, dual-duct, or ability to operate in both configurations), presence of heating function, and primary condensate removal feature (auto-evaporation, gravity drain, removable internal collection bucket, or condensate pump).

■ 4. Section 429.134 is amended by adding paragraph (r) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(r) *Portable air conditioners. Verification of seasonally adjusted cooling capacity.* The seasonally adjusted cooling capacity will be measured pursuant to the test requirements of 10 CFR part 430 for each unit tested. The results of the measurement(s) will be averaged and compared to the value of seasonally adjusted cooling capacity certified by the manufacturer. The certified seasonally adjusted cooling capacity will be considered valid only if the average measured seasonally adjusted cooling capacity is within five percent of the certified seasonally adjusted cooling capacity.

(1) If the certified seasonally adjusted cooling capacity is found to be valid, the certified value will be used as the basis for determining the minimum allowed combined energy efficiency ratio for the basic model.

(2) If the certified seasonally adjusted cooling capacity is found to be invalid, the average measured seasonally adjusted cooling capacity will be used to determine the minimum allowed combined energy efficiency ratio for the basic model.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 5. The authority citation for Part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 6. Section 430.32 is amended by adding paragraph (cc) to read as follows:

§ 430.32 Energy and water conservation standards and their effective dates.

* * * * *

(cc) *Portable air conditioners.* Single-duct portable air conditioners and dual-duct portable air conditioners manufactured on or after January 10, 2025 must have a combined energy efficiency ratio (CEER) in Btu/Wh no less than SACC: Seasonally adjusted cooling capacity in Btu/h, as determined in appendix CC of subpart B of this part.

$$CEER = 1.04 \times \frac{SACC}{(3.7117 \times SACC^{0.6384})}$$

Note: The following letter will not appear in the Code of Federal Regulations.

U.S. DEPARTMENT OF JUSTICE
Antitrust Division
Renata B. Hesse
Acting Assistant Attorney General
RFK Main Justice Building
950 Pennsylvania Avenue NW
Washington, DC 20530–0001
(202) 514–2401 / (202) 616–2645 (Fax)

August 12, 2016

Anne Harkavy
Deputy General Counsel for Litigation, Regulation and Enforcement
U.S. Department of Energy
Washington, DC 20585

Re: Docket No. EERE–2013–BT–STD–0033

Dear Deputy General Counsel Harkavy:

I am responding to your June 13, 2016 letter seeking the views of the Attorney General about the potential impact on competition of proposed energy conservation standards for portable air conditioners.

Your request was submitted under Section 325(o)(2)(B)(i)(V) of the Energy Policy and Conservation Act, as amended (ECPA), 42 U.S.C. 6295(o)(2)(B)(i)(V), which requires the Attorney General to make a determination of the impact of any lessening of competition that is likely to result from the imposition of proposed energy conservation standards. The Attorney General's responsibility for responding to requests from other departments about the effect of a program on competition was delegated to the Assistant Attorney General for the Antitrust Division in 28 CFR 0.40(g).

In conducting its analysis, the Antitrust Division examines whether a proposed standard may lessen competition, for example, by substantially limiting consumer choice or increasing industry concentration. A lessening of competition could result in higher prices to manufacturers and consumers.

We have reviewed the proposed standards contained in the Notice of Proposed Rulemaking (81 FR 38398, June 13, 2016) and the related technical support documents. We have also monitored the public meeting held on the proposed standards on July 20, 2016, and conducted interviews with industry members.

Based on the information currently available, we do not believe that the proposed energy conservation standards for portable air conditioners are likely to have a significant adverse impact on competition.

Sincerely,

Renata B. Hesse

[FR Doc. 2019–26350 Filed 1–9–20; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

10 CFR Part 430

[Docket Number EERE–2016–BT–STD–0022]

RIN 1904–AD69

Energy Conservation Program: Energy Conservation Standards for Uninterruptible Power Supplies

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including battery chargers. EPCA also requires the U.S. Department of Energy (DOE) to periodically determine whether more-stringent standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this final rule, DOE is adopting new energy conservation standards for uninterruptible power supplies, a class of battery chargers. It has determined that the new energy conservation standards for these products would result in significant conservation of energy, and are technologically feasible and economically justified.

DATES: The effective date of this rule is March 10, 2020. Compliance with the new standards established for uninterruptible power supplies in this final rule is required on and after January 10, 2022.

ADDRESSES: The docket for this rulemaking, which includes **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at *http://www.regulations.gov/#!docketDetail;D=EERE-2016-BT-STD-0022.* The docket web page contains simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 586–6636 or by email: *ApplianceStandardsQuestions@ee.doe.gov.*

FOR FURTHER INFORMATION CONTACT:

Jeremy Dommu, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–9870. Email: *ApplianceStandardsQuestions@ee.doe.gov.*

Celia Sher, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 287–6122. Email: *Celia.Sher@hq.doe.gov.*

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I. Synopsis of the Final Rule

Title III, Part B [1] of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Public Law 94–163 (42 U.S.C. 6291–6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles.[2] These products include battery chargers, the subject of this rulemaking.

Pursuant to EPCA, any new or amended energy conservation standard must be designed to achieve the maximum improvement in energy efficiency that DOE determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) Furthermore, the new or amended standard must result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B)) EPCA also provides that not later than 6 years after issuance of any final rule establishing or amending a standard, DOE must publish either a notice of determination that standards for the product do not need to be amended, or a notice of proposed rulemaking including new proposed energy conservation standards (proceeding to a final rule, as appropriate). (42 U.S.C. 6295(m))

In accordance with these and other statutory provisions discussed in this document, DOE is adopting new energy conservation standards for uninterruptible power supplies (hereafter referred to as ''UPSs''), a class of battery chargers. The adopted standards, which are expressed in average load adjusted efficiency, are shown in Table I–1. These standards apply to all products listed in Table I–1 and manufactured in, or imported into, the United States starting on and after two years after the publication of this final rule that utilize a NEMA 1–15P or 5–15P input plug and have an AC output.

[1] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

[2] All references to EPCA in this document refer to the statute as amended through the Energy Efficiency Improvement Act of 2015, Public Law 114–11 (April 30, 2015).

TABLE I–1—ENERGY CONSERVATION STANDARDS FOR UPSS

[Compliance starting January 10, 2022]

UPS product class	Rated output power	Minimum efficiency
Voltage and Frequency Dependent	$0W < P_{rated} \leq 300\ W$	$-1.20E{-}06 * P^2_{rated} + 7.17E{-}04 * P_{rated} + 0.862$.
	$300\ W < P_{rated} \leq 700\ W$	$-7.85E{-}08 * P^2_{rated} + 1.01E{-}04 * P_{rated} + 0.946$.
	$P_{rated} > 700\ W$	$-7.23E{-}09 * P^2_{rated} + 7.52E{-}06 * P_{rated} + 0.977$.
Voltage Independent	$0W < P_{rated} \leq 300\ W$	$-1.20E{-}08 * P^2_{rated} + 7.19E{-}04 * P_{rated} + 0.863$.
	$300\ W < P_{rated} \leq 700\ W$	$-7.67E{-}08 * P^2_{rated} + 1.05E{-}04 * P_{rated} + 0.946$.
	$P_{rated} > 700\ W$	$-4.62E{-}09 * P^2_{rated} + 8.54E{-}06 * P_{rated} + 0.979$.
Voltage and Frequency Independent	$0W < P_{rated} \leq 300\ W$	$-3.13E{-}08 * P^2_{rated} + 1.96E{-}04 * P_{rated} + 0.543$.
	$300\ W < P_{rated} \leq 700\ W$	$-2.60E{-}08 * P^2_{rated} + 3.65E{-}04 * P_{rated} + 0.764$.
	$P_{rated} > 700\ W$	$-1.70E{-}08 * P^2_{rated} + 3.85E{-}06 * P_{rated} + 0.876$.

A. Benefits and Costs to Consumers

Table I–2 summarizes DOE's evaluation of the economic impacts of the adopted standards on consumers of UPSs, as measured by the average life-cycle cost (LCC) savings and the simple payback period (PBP).[3] The average LCC savings are positive for all product classes, and the PBP is less than the average lifetime of UPSs, which is estimated to be between 5 and 10 years (see section IV.F).

TABLE I–2—IMPACTS OF ADOPTED ENERGY CONSERVATION STANDARDS ON CONSUMERS OF UPSS

Product class	Description	Average LCC savings (2015$)	Simple payback period (years)
10a	VFD UPS	$32	*0.0
10b	VI UPS	12	3.7
10c	VFI UPS	36	4.4

*The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

DOE's analysis of the impacts of the adopted standards on consumers is described in section IV.F of this document.

B. Impact on Manufacturers

The industry net present value (INPV) is the sum of the discounted cash flows to the industry from the reference year through the end of the analysis period (2016–2048). Using a real discount rate of 6.1 percent, DOE estimates that the INPV for manufacturers of UPSs in the case without new standards is $2,575 million in 2015$. Under the adopted standards, DOE expects the change in INPV to range from −15.9 percent to 6.3 percent, which is approximately −$409 million to $162 million. In order to bring products into compliance with adopted standards, DOE expects the industry to incur total conversion costs of $36 million.

DOE's analysis of the impacts of the adopted standards on manufacturers is described in section IV.J and section V.B.2 of this document.

C. National Benefits and Costs[4]

DOE's analyses indicate that the adopted energy conservation standards for UPSs would save a significant amount of energy. Relative to the case without new standards, the lifetime energy savings for UPSs purchased in the 30-year period that begins in the anticipated year of compliance with the new standards (2019–2048), amount to 0.94 quadrillion British thermal units (Btu), or quads.[5] This represents a savings of 15 percent relative to the energy use of these products in the case without new standards (referred to as the ''no-new-standards case'').

The cumulative net present value (NPV) of total consumer benefits of the standards for UPSs ranges from $1.3 billion (at a 7-percent discount rate) to $3.0 billion (at a 3-percent discount rate). This NPV expresses the estimated total value of future operating-cost savings minus the estimated increased product costs for UPSs purchased in 2019–2048.

In addition, the adopted standards for UPSs are projected to yield significant environmental benefits. DOE estimates that the standards will result in cumulative emission reductions (over the same period as for energy savings)

[3] The average LCC savings refer to consumers that are affected by a standard and are measured relative to the efficiency distribution in the no-new-standards case, which depicts the market in the compliance year in the absence of new standards (see section IV.F.8). The simple PBP, which is designed to compare specific efficiency levels, is measured relative to the baseline product (see section IV.C).

[4] All monetary values in this document are expressed in 2015 dollars and, where appropriate, are discounted to 2016 unless explicitly stated otherwise.

[5] The quantity refers to full-fuel-cycle (FFC) energy savings. FFC energy savings includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and, thus, presents a more complete picture of the impacts of energy efficiency standards. For more information on the FFC metric, see section IV.H.1.

of 49 million metric tons (Mt)[6] of carbon dioxide (CO_2), 39 thousand tons of sulfur dioxide (SO_2), 63 thousand tons of nitrogen oxides (NO_X), 238 thousand tons of methane (CH_4), 0.73 thousand tons of nitrous oxide (N_2O), and 0.13 tons of mercury (Hg).[7] The estimated cumulative reduction in CO_2 emissions through 2030 amounts to 12 Mt, which is equivalent to the emissions resulting from the annual electricity use of 1.8 million homes.

The value of the CO_2 reduction is calculated using a range of values per metric ton (t) of CO_2 (otherwise known as the ''social cost of CO_2,'' or SC-CO_2) developed by a Federal interagency working group.[8] The derivation of the SC-CO_2 values is discussed in section IV.L.1. Using discount rates appropriate for each set of SC-CO_2 values, DOE estimates that the present value of the CO_2 emissions reduction (not including CO_2 equivalent emissions of other gases with global warming potential) is between $0.37 billion and $5.0 billion, with a value of $1.7 billion using the central SC-CO_2 case represented by $47.4/metric ton (t) in 2020. DOE also estimates the present value of the NO_X emissions reduction to be $0.06 billion using a 7-percent discount rate, and $0.12 billion using a 3-percent discount rate.[9] DOE is still investigating appropriate valuation of the reduction in other emissions, and therefore did not include any such values in the analysis for this final rule.

Table I–3 summarizes the economic benefits and costs expected to result from the adopted standards for UPSs.

TABLE I–3—SELECTED CATEGORIES OF ECONOMIC BENEFITS AND COSTS OF ADOPTED ENERGY CONSERVATION STANDARDS FOR UPSS *

Category	Present value (billion 2015$)	Discount rate (percent)
Benefits		
Consumer Operating Cost Savings	2.8	7
	5.6	3
CO_2 Reduction (using avg. SC-CO_2 at 5% discount rate) **	0.37	5
CO_2 Reduction (using avg. SC-CO_2 at 3% discount rate) **	1.7	3
CO_2 Reduction (using avg. SC-CO_2 at 2.5% discount rate) **	2.6	2.5
CO_2 Reduction (using 95th percentile SC-CO_2 at 3% discount rate) **	5.0	3
NO_X Reduction †	0.06	7
	0.12	3
Total Benefits ‡	4.5	7
	7.3	3
Costs		
Consumer Incremental Installed Costs	1.4	7
	2.6	3
Total Net Benefits		
Including CO_2 and NO_X Reduction Monetized Value ‡	3.1	7
	4.8	3

* This table presents the costs and benefits associated with UPSs shipped in 2019–2048. These results include benefits to consumers which accrue after 2048 from the products purchased in 2019–2048. The incremental installed costs include incremental equipment cost as well as installation costs. The costs account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule. The CO_2 reduction benefits are global benefits due to actions that occur domestically.

** The interagency group selected four sets of SC-CO_2 values for use in regulatory analyses. Three sets of values are based on the average SC-CO_2 from the integrated assessment models, at discount rates of 5 percent, 3 percent, and 2.5 percent. For example, for 2020 emissions, these values are $13.5/t, $47.4/t, and $69.9/t, in 2015$, respectively. The fourth set ($139/t in 2015$ for 2015 emissions), which represents the 95th percentile of the SC-CO_2 distribution calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the SC-CO_2 distribution. The SC-CO_2 values are emission year specific. See section IV.L.1 for more details.

[6] A metric ton is equivalent to 1.1 short tons. Results for emissions other than CO_2 are presented in short tons.

[7] DOE calculated emissions reductions relative to the no-new-standards-case, which reflects key assumptions in the *Annual Energy Outlook 2016* (*AEO2016*). *AEO2016* represents current federal and state legislation and final implementation of regulations as of the end of February 2016. *AEO2016* incorporates implementation of the Clean Power Plan (CPP). DOE is using the *AEO2016* No-CPP case as a basis for its analysis because the standards finalized in this rulemaking will take effect before the requirements of the CPP. The standards finalized in this rulemaking will reduce the projected burden on the States to meet the requirements of the CPP since these standards are not included in the *AEO2016* Reference Case.

[8] United States Government—Interagency Working Group on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* May 2013. Revised July 2015. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

[9] DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See section IV.L.2 for further discussion. The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. *Chamber of Commerce, et al.* v. *EPA, et al.,* Order in Pending Case, 577 U.S. __ __ (2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan. To be conservative, DOE is primarily using a lower national benefit-per-ton estimate for NO_X emitted from the Electricity Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.2 for further discussion. *To be conservative,* DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the electricity generating sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average SC-CO_2 with 3-percent discount rate.

The benefits and costs of the adopted standards, for UPSs sold in 2019–2048, can also be expressed in terms of annualized values. The monetary values for the total annualized net benefits are (1) the reduced consumer operating costs, minus (2) the increases in product purchase prices and installation costs, plus (3) the value of the benefits of CO_2 and NO_X emission reductions, all annualized.[10]

The national operating cost savings are domestic private U.S. consumer monetary savings that occur as a result of purchasing the covered products and are measured for the lifetime of UPSs shipped in 2019–2048. The benefits associated with reduced CO_2 emissions achieved as a result of the adopted standards are also calculated based on the lifetime of UPSs shipped in 2019–2048. Because CO_2 emissions have a very long residence time in the atmosphere, the SC-CO_2 values for CO_2 emissions in future years reflect impacts that continue through 2300. The CO_2 reduction is a benefit that accrues globally. DOE maintains that consideration of global benefits is appropriate because of the global nature of the climate change problem.

Estimates of annualized benefits and costs of the adopted standards are shown in Table I–4. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than CO_2 reduction, (for which DOE used a 3-percent discount rate along with the SC-CO_2 series that has a value of $47.4/t in 2020),[11] the estimated cost of the standards in this rule is $131 million per year in increased equipment costs, while the estimated annual benefits are $255 million in reduced equipment operating costs, $90 million in CO_2 reductions, and $5.1 million in reduced NO_X emissions. In this case, the net benefit amounts to $219 million per year. Using a 3-percent discount rate for all benefits and costs and the SC-CO_2 series has a value of $47.4/t in 2020, the estimated cost of the standards is $140 million per year in increased equipment costs, while the estimated annual benefits are $301 million in reduced operating costs, $90 million in CO_2 reductions, and $6.6 million in reduced NO_X emissions. In this case, the net benefit amounts to $257 million per year.

TABLE I–4—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS FOR UPSs *

	Discount rate (percent)	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings	7	255	231	284.
	3	301	270	341.
CO_2 Reduction (using avg. SC-CO_2 at 5% discount rate) **	5	27	24	30.
CO_2 Reduction (using avg. SC-CO_2 at 3% discount rate) **	3	90	80	101.
CO_2 Reduction (using avg. SC-CO_2 at 2.5% discount rate) **	2.5	131	116	148.
CO_2 Reduction (using 95th percentile SC-CO_2 at 3% discount rate) **	3	273	242	308.
NO_X Reduction †	7	5.1	4.6	13.
	3	6.6	5.9	17.
Total Benefits ‡	7 plus CO_2 range	287 to 533	260 to 478	327 to 606.
	7	349	316	398.
	3 plus CO_2 range	335 to 581	300 to 519	388 to 666.
	3	397	356	459.
Costs				
Consumer Incremental Product Costs	7	131	118	145.
	3	140	124	157.
Net Benefits				
Total ‡	7 plus CO_2 range	156 to 402	142 to 361	182 to 460.
	7	219	198	253.
	3 plus CO_2 range	195 to 441	176 to 394	231 to 509.

[10] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2016, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (*e.g.,* 2020 or 2030), and then discounted the present value from each year to 2016. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates, as shown in Table I–3. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year, that yields the same present value.

[11] DOE used a 3-percent discount rate because the SC-CO_2 values for the series used in the calculation were derived using a 3-percent discount rate.

TABLE I–4—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS FOR UPSS *—Continued

	Discount rate (percent)	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
	3	257	231	302.

* This table presents the annualized costs and benefits associated with UPSs shipped in 2019–2048. These results include benefits to consumers which accrue after 2048 from the UPSs purchased from 2019–2048. The incremental installed costs include incremental equipment cost as well as installation costs. The results account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy prices from the *AEO 2016* No-CPP case, Low Economic Growth case, and High Economic Growth case, respectively. Shipment projections are also scaled based on the GDP index in the Low and High Economic Growth cases. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

** The CO_2 reduction benefits are calculated using four different sets of SC-CO_2 values. The first three use the average SC-CO_2 calculated using 5-percent, 3-percent, and 2.5-percent discount rates, respectively. The fourth represents the 95th percentile of the SC-CO_2 distribution calculated using a 3-percent discount rate. The SC-CO_2 values are emission year specific. See section IV.L.1 for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.2 for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the ACS study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average SC-CO_2 with 3-percent discount rate. In the rows labeled "7% plus CO_2 range" and "3% plus CO_2 range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of CO_2 values.

DOE's analysis of the national impacts of the adopted standards is described in sections IV.H, IV.K, and IV.L of this final rule.

D. Conclusion

Based on the analyses culminating in this final rule, DOE found the benefits to the nation of the standards (energy savings, consumer LCC savings, positive NPV of consumer benefit, and emission reductions) outweigh the burdens (loss of INPV and LCC increases for some users of these products). DOE has concluded that the standards in this final rule represent the maximum improvement in energy efficiency that is technologically feasible and economically justified, and would result in significant conservation of energy.

II. Introduction

The following section briefly discusses the statutory authority underlying this final rule, as well as some of the relevant historical background related to the establishment of standards for battery chargers. DOE's regulations define ''battery charger'' as a device that charges batteries for consumer products, including battery chargers embedded in other consumer products. 10 CFR 430.2.

A. Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Public Law 94–163 (codified as 42 U.S.C. 6291–6309) established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances (collectively referred to as ''covered products''), which includes battery chargers.

Section 309 of the Energy Independence and Security Act of 2007 (''EISA 2007'') amended EPCA by directing DOE to prescribe, by rule, definitions and test procedure for the power use of battery chargers (42 U.S.C. 6295(u)(1)), and to issue a final rule that prescribes energy conservation standards for battery chargers or classes of battery chargers or determine that no energy conservation standard is technologically feasible and economically justified. (42 U.S.C. 6295(u)(1)(E)). DOE finalized energy conservation standards for some classes of battery chargers on June 13, 2016 (81 FR 38266), and the standards prescribed in this final rule for other classes of battery chargers represent an extension of those requirements.

Pursuant to EPCA, DOE's energy conservation program for covered products consists essentially of four parts: (1) Testing, (2) labeling, (3) the establishment of Federal energy conservation standards, and (4) certification and enforcement procedures. The Federal Trade Commission (FTC) is primarily responsible for labeling, and DOE implements the remainder of the program. Subject to certain criteria and conditions, DOE is required to develop test procedures to measure the energy efficiency, energy use, or estimated annual operating cost of each covered product. (42 U.S.C. 6295(o)(3)(A) and (r)) Manufacturers of covered products must use the prescribed DOE test procedure as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA and when making representations to the public regarding the energy use or efficiency of those products. (42 U.S.C. 6293(c) and 42 U.S.C. 6295(s)) Similarly, DOE must use these test procedures to determine whether the products comply with standards adopted pursuant to EPCA. (42 U.S.C. 6295(s)) The DOE test procedure for battery chargers appears at title 10 of the Code of Federal Regulations (CFR) part 430, subpart B, appendix Y.

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products, including battery chargers. Any new or amended standard for a covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary of Energy determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A) and (3)(B)) Furthermore, DOE may not adopt any standard that would not result in the significant conservation of energy. (42 U.S.C. 6295(o)(3)) Moreover, DOE may not prescribe a standard: (1) For certain products, including battery chargers, if no test procedure has been established for the product, or (2) if DOE determines by rule that the standard is not

technologically feasible or economically justified. (42 U.S.C. 6295(o)(3)(A)and (B)) In deciding whether a proposed standard is economically justified, DOE must determine whether the benefits of the standard exceed its burdens. (42 U.S.C. 6295(o)(2)(B)(i)) DOE must make this determination after receiving comments on the proposed standard, and by considering, to the greatest extent practicable, the following seven statutory factors:

(1) The economic impact of the standard on manufacturers and consumers of the products subject to the standard;

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial charges, or maintenance expenses for the covered products that are likely to result from the standard;

(3) The total projected amount of energy (or as applicable, water) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the covered products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy (Secretary) considers relevant. (42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII))

Further, EPCA, as codified, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii))

EPCA, as codified, also contains what is known as an ''anti-backsliding'' provision, which prevents the Secretary from prescribing any amended standard that either increases the maximum allowable energy use or decreases the minimum required energy efficiency of a covered product. (42 U.S.C. 6295(o)(1)) Also, the Secretary may not prescribe an amended or new standard if interested persons have established by a preponderance of the evidence that the standard is likely to result in the unavailability in the United States in any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States. (42 U.S.C. 6295(o)(4))

Additionally, EPCA specifies requirements when promulgating an energy conservation standard for a covered product that has two or more subcategories. DOE must specify a different standard level for a type or class of products that has the same function or intended use if DOE determines that products within such group (A) consume a different kind of energy from that consumed by other covered products within such type (or class); or (B) have a capacity or other performance-related feature which other products within such type (or class) do not have and such feature justifies a higher or lower standard. (42 U.S.C. 6295(q)(1)) In determining whether a performance-related feature justifies a different standard for a group of products, DOE must consider such factors as the utility to the consumer of such a feature and other factors DOE deems appropriate. *Id.* Any rule prescribing such a standard must include an explanation of the basis on which such higher or lower level was established. (42 U.S.C. 6295(q)(2))

Federal energy conservation requirements generally supersede State laws or regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)–(c)) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d)).

Finally, pursuant to the amendments contained in EISA 2007), any final rule for new or amended energy conservation standards promulgated after July 1, 2010, is required to address standby mode and off mode energy use. (42 U.S.C. 6295(gg)(3)) Specifically, when DOE adopts a standard for a covered product after that date, it must, if justified by the criteria for adoption of standards under EPCA (42 U.S.C. 6295(o)), incorporate standby mode and off mode energy use into a single standard, or, if that is not feasible, adopt a separate standard for such energy use for that product. (42 U.S.C. 6295(gg)(3)(A)–(B)).

B. Background

1. Current Standards

In a final rule published on June 13, 2016, DOE prescribed the current energy conservation standards for battery chargers manufactured on and after July 13, 2018. 81 FR 38266. These standards, which do not cover UPSs, are set forth in DOE's regulations at 10 CFR 430.32 and are repeated in Table II–1.

TABLE II–1—FEDERAL ENERGY EFFICIENCY STANDARDS FOR BATTERY CHARGERS

Product class	Product class description	Battery energy watt-hours (Wh)	Special characteristic or battery voltage	Adopted standard as a function of battery energy (kWh/yr)
1	Low-Energy	≤5 Wh	Inductive Connection in Wet Environments.	3.04.
2	Low-Energy, Low-Voltage	<100 Wh	<4 V	0.1440 * E_{batt} + 2.95.
3	Low-Energy, Medium-Voltage		4–10 V	For E_{batt} <10Wh, 1.42 kWh/y E_{batt} ≥10 Wh, 0.0255 * E_{batt} + 1.16.
4	Low-Energy, High-Voltage		>10 V	0.11 * E_{batt} + 3.18.
5	Medium-Energy, Low-Voltage	100–3000 Wh	<20 V	0.0257 * E_{batt} + .815.
6	Medium-Energy, High-Voltage		≥20 V	0.0778 * E_{batt} + 2.4.
7	High-Energy		>3000 Wh	0.0502 * E_{batt} + 4.53.

2. History of Standards Rulemaking for UPSs

DOE originally proposed energy conservation standards for battery chargers including UPSs in the battery charger energy conservation standards NOPR published on March 27, 2012 (March 2012 NOPR). In this NOPR, DOE proposed to test all covered battery chargers, including UPSs, using the battery charger test procedure finalized on June 1, 2011 and to regulate them

using a unit energy consumption (''UEC'') metric. See 77 FR 18478.

DOE issued a battery charger energy conservation standards supplemental notice of proposed rulemaking (''SNOPR'') to propose revised energy standards for battery chargers on September 1, 2015. See 80 FR 52850. This notice did not propose standards for UPSs because of DOE's intention to regulate UPS as part of the separate rulemaking for computer and battery backup systems. DOE also issued a battery charger test procedure NOPR on August 6, 2015, which proposed to exclude backup battery chargers, including UPSs, from the scope of the battery charger test procedure. See 80 FR 46855. DOE held a public meeting on September 15, 2015 to discuss both of these notices.

During 2014, DOE explored whether to regulate UPSs as ''computer systems.'' See, *e.g.,* 79 FR 11345 (Feb. 28, 2014) (proposed coverage determination); 79 FR 41656 (July 17, 2014) (computer systems framework document). DOE received a number of comments in response to those documents (and the related public meetings) regarding testing of UPSs and the appropriate venue to address these devices.

Additionally, DOE received a number of stakeholder comments on the August 2015 battery charger test procedure NOPR and the September 2015 battery charger energy conservation standard SNOPR regarding regulation of UPSs. After considering these comments, DOE reconsidered its position and found that since a UPS meets the definition of a battery charger, it is more appropriate to regulate UPSs as part of the battery charger rulemaking, rather than the computers rulemaking. While the changes proposed in the August 2015 battery charger test procedure NOPR and the September 2015 energy conservation standard SNOPR were finalized on May 20, 2016 (81 FR 31827) and June 13, 2016 (81 FR 38266), respectively, DOE continues to conduct rulemaking activities to consider test procedures and energy conservations standards for UPSs as part of ongoing and future battery charger rulemaking proceedings.

DOE published a notice of proposed rulemaking on May 19, 2016 to amend the battery charger test procedure to include specific testing requirements for UPSs (''UPS test procedure NOPR''). See 81 FR 31542. Subsequently, DOE proposed energy conservation standards for UPSs as part of the battery charger regulations in the NOPR published on August 5, 2016 (August 2016 NOPR). See 81 FR 52196. On December 12, 2016, DOE finalized the addition of specific testing provisions for UPSs in the UPS test procedure final rulemaking. See 81 FR 89806. DOE is now finalizing energy conservation standards for UPSs as part of the battery charger regulation in this final rule.

III. General Discussion

In response to the August 2016 NOPR, DOE received written comments from 8 interested parties, including manufacturers, trade associations, standards development organizations and energy efficiency advocacy groups. Table III–1 lists the entities that commented on the August 2016 NOPR. These comments are discussed in further detail below. The full set of comments on the August 2016 NOPR can be found at: *https://www.regulations.gov/docket?D=EERE-2016-BT-STD-0022.*

TABLE III–1—INTERESTED PARTIES THAT PROVIDED WRITTEN COMMENTS ON THE AUGUST 2016 NOPR

Commenter	Acronym	Organization type/affiliation	Comment No. (docket reference)
Appliance Standards Awareness Project, Alliance to Save Energy, Northwest Energy Efficiency Alliance, Natural Resources Defense Council, Northeast Energy Efficiency Partnerships, and Northwest Power and Conservation Council.	ASAP et al	Efficiency Organizations	0020
California Investor Owned Utilities	CA IOUs	Utility Association	0016
Edison Electric Institute	EEI	Utility Association	0021
Industrial Energy Consumers of America	IECA	Manufacturer Association	0015
National Electrical Manufacturers Associations and Information Technology Industry Council.	NEMA & ITI	Manufacturer Associations	0019
Philips Lighting	Philips Lighting	Manufacturer	0022
Schneider Electric	Schneider Electric	Manufacturer	0017
U.S. Chamber of Commerce, American Coke and Coal Chemicals Institute, American Forest & Paper Association, American Fuel & Petrochemical Manufacturers, American Petroleum Institute, Association of Home Appliance Manufacturers, Brick Industry Association, Council of Industrial Boiler Owners, National Association of Manufacturers, National Mining Association, National Oilseed Processors Association, and Portland Cement Association.	Associations	Manufacturer Associations	0018

A number of interested parties also provided oral comments at the September 16, 2016, public meeting. These comments can be found in the public meeting transcript (Pub. Mtg. Tr., No. 0014) which is available on the docket.

A. Test Procedure

DOE published the UPS test procedure final rule on December 12, 2016. 81 FR 89806. DOE advises all stakeholders to review that final rule.

B. Technological Feasibility

1. General

In each energy conservation standards rulemaking, DOE conducts a screening analysis based on information gathered on all current technology options and prototype designs that could improve the efficiency of the products or equipment that are the subject of the rulemaking. As the first step in such an analysis, DOE develops a list of technology options for consideration in consultation with manufacturers, design engineers, and other interested parties. DOE then determines which of those means for improving efficiency are technologically feasible. DOE considers technologies incorporated in

commercially available products or in working prototypes to be technologically feasible. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(i)

After DOE has determined that particular technology options are technologically feasible, it further evaluates each technology option in light of the following additional screening criteria: (1) Practicability to manufacture, install, and service; (2) adverse impacts on product utility or availability; and (3) adverse impacts on health or safety. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(ii)–(iv) Additionally, it is DOE policy not to include in its analysis any proprietary technology that is a unique pathway to achieving a certain efficiency level. Section IV.B of this final rule discusses the results of the screening analysis for UPSs, particularly the designs DOE considered, those it screened out, and those that are the basis for the standards considered in this rulemaking. For further details on the screening analysis for this rulemaking, see chapter 4 of the final rule technical support document (TSD).

2. Maximum Technologically Feasible Levels

When DOE proposes to adopt an amended standard for a type or class of covered product, it must determine the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible for such product. (42 U.S.C. 6295(p)(1)) Accordingly, in the engineering analysis, DOE determined the maximum technologically feasible (''max-tech'') improvements in energy efficiency for UPSs, using the design parameters for the most efficient products available on the market or in working prototypes. The max-tech levels that DOE determined for this rulemaking are described in section IV.B of this final rule and in chapter 5 of the final rule TSD.

C. Energy Savings

1. Determination of Savings

For each trial standard level (TSL), DOE projected energy savings from application of the TSL to UPSs purchased in the 30-year period that begins in the year of compliance with the adopted standards (2019–2048).[12] The savings are measured over the entire lifetime of UPSs purchased in the 30-year analysis period. DOE quantified the energy savings attributable to each TSL as the difference in energy consumption between each standards case and the no-new-standards case. The no-new-standards case represents a projection of energy consumption that reflects how the market for a product would likely evolve in the absence of new energy conservation standards.

DOE used its national impact analysis (NIA) spreadsheet models to estimate national energy savings (NES) from potential new standards for UPSs. The NIA spreadsheet model (described in section IV.H of this final rule) calculates energy savings in terms of site energy, which is the energy directly consumed by products at the locations where they are used. For electricity, DOE reports national energy savings in terms of primary energy savings, which is the savings in the energy that is used to generate and transmit the site electricity. For natural gas, the primary energy savings are considered to be equal to the site energy savings. DOE also calculates NES in terms of full-fuel-cycle (FFC) energy savings. The FFC metric includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and thus presents a more complete picture of the impacts of energy conservation standards.[13] DOE's approach is based on the calculation of an FFC multiplier for each of the energy types used by covered products or equipment. For more information on FFC energy savings, see section IV.H.2 of this final rule.

2. Significance of Savings

To adopt any new standards for a covered product, DOE must determine that such action would result in significant energy savings. (42 U.S.C. 6295(o)(3)(B)) Although the term ''significant'' is not defined in the Act, the U.S. Court of Appeals, for the District of Columbia Circuit in *Natural Resources Defense Council* v. *Herrington,* 768 F.2d 1355, 1373 (D.C. Cir. 1985), indicated that Congress intended ''significant'' energy savings in the context of EPCA to be savings that are not ''genuinely trivial.'' The energy savings for all the TSLs considered in this rulemaking, including the adopted standards, are nontrivial, and, therefore, DOE considers them ''significant'' within the meaning of section 325 of EPCA.

D. Economic Justification

1. Specific Criteria

As noted in this preamble, EPCA provides seven factors to be evaluated in determining whether a potential energy conservation standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(I)(VII)) The following sections discuss how DOE has addressed each of those seven factors in this rulemaking.

a. Economic Impact on Manufacturers and Consumers

In determining the impacts of potential amended standards on manufacturers, DOE conducts a manufacturer impact analysis (MIA), as discussed in section IV.J. DOE first uses an annual cash-flow approach to determine the quantitative impacts. This step includes both a short-term assessment—based on the cost and capital requirements during the period between when a regulation is issued and when entities must comply with the regulation—and a long-term assessment over a 30-year period. The industry-wide impacts analyzed include (1) industry net present value (INPV), which values the industry on the basis of expected future cash flows; (2) cash flows by year; (3) changes in revenue and income; and (4) other measures of impact, as appropriate. Second, DOE analyzes and reports the impacts on different types of manufacturers, including impacts on small manufacturers. Third, DOE considers the impact of standards on domestic manufacturer employment and manufacturing capacity, as well as the potential for standards to result in plant closures and loss of capital investment. Finally, DOE takes into account cumulative impacts of various DOE regulations and other regulatory requirements on manufacturers.

For individual consumers, measures of economic impact include the changes in LCC and payback period (PBP) associated with new or amended standards. These measures are discussed further in the following section. For consumers in the aggregate, DOE also calculates the national net present value of the economic impacts applicable to a particular rulemaking. DOE also evaluates the LCC impacts of potential standards on identifiable subgroups of consumers that may be affected disproportionately by a national standard.

b. Savings in Operating Costs Compared to Increase in Price (LCC and PBP)

EPCA requires DOE to consider the savings in operating costs throughout

[12] DOE also presents a sensitivity analysis that considers impacts for products shipped in a 9-year period.

[13] The FFC metric is discussed in DOE's statement of policy and notice of policy amendment. 76 FR 51282 (Aug. 18, 2011), as amended at 77 FR 49701 (Aug. 17, 2012).

the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered product that are likely to result from a standard. (42 U.S.C. 6295(o)(2)(B)(i)(II)) DOE conducts this comparison in its LCC and PBP analysis.

The LCC is the sum of the purchase price of a product (including its installation) and the operating cost (including energy, maintenance, and repair expenditures) discounted over the lifetime of the product. The LCC analysis requires a variety of inputs, such as product prices, product energy consumption, energy prices, maintenance and repair costs, product lifetime, and discount rates appropriate for consumers. To account for uncertainty and variability in specific inputs, such as product lifetime and discount rate, DOE uses a distribution of values, with probabilities attached to each value.

The PBP is the estimated amount of time (in years) it takes consumers to recover the increased purchase cost (including installation) of a more-efficient product through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost due to a more-stringent standard by the change in annual operating cost for the year that standards are assumed to take effect.

For its LCC and PBP analysis, DOE assumes that consumers will purchase the covered products in the first year of compliance with new or amended standards. The LCC savings for the considered efficiency levels are calculated relative to the case that reflects projected market trends in the absence of new or amended standards. DOE's LCC and PBP analysis is discussed in further detail in section IV.F of this document.

c. Energy Savings

Although significant conservation of energy is a separate statutory requirement for adopting an energy conservation standard, EPCA requires DOE, in determining the economic justification of a standard, to consider the total projected energy savings that are expected to result directly from the standard. (42 U.S.C. 6295(o)(2)(B)(i)(III)) As discussed in section IV.H, DOE uses the NIA spreadsheet models to project national energy savings.

d. Lessening of Utility or Performance of Products

In establishing product classes, and in evaluating design options and the impact of potential standard levels, DOE evaluates potential standards that would not lessen the utility or performance of the considered products. (42 U.S.C. 6295(o)(2)(B)(i)(IV)) Based on data available to DOE, the standards adopted in this document would not reduce the utility or performance of the products under consideration in this rulemaking.

e. Impact of Any Lessening of Competition

EPCA directs DOE to consider the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from a standard. (42 U.S.C. 6295(o)(2)(B)(i)(V)) It also directs the Attorney General to determine the impact, if any, of any lessening of competition likely to result from a standard and to transmit such determination to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. (42 U.S.C. 6295(o)(2)(B)(ii)) To assist the Department of Justice (DOJ) in making such a determination, DOE transmitted copies of its proposed rule and the NOPR TSD to the Attorney General for review, with a request that the DOJ provide its determination on this issue. In its assessment letter responding to DOE, DOJ concluded that the proposed energy conservation standards for UPS are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

f. Need for National Energy Conservation

DOE also considers the need for national energy conservation in determining whether a new or amended standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(VI)) The energy savings from the adopted standards are likely to provide improvements to the security and reliability of the Nation's energy system. Reductions in the demand for electricity also may result in reduced costs for maintaining the reliability of the Nation's electricity system. DOE conducts a utility impact analysis to estimate how standards may affect the Nation's needed power generation capacity, as discussed in section IV.M of this document.

DOE maintains that environmental and public health benefits associated with the more efficient use of energy are important to take into account when considering the need for national energy conservation. The adopted standards are likely to result in environmental benefits in the form of reduced emissions of air pollutants and greenhouse gases (GHGs) associated with energy production and use. DOE conducts an emissions analysis to estimate how potential standards may affect these emissions, as discussed in section IV.K of this document; the estimated emissions impacts are reported in section V.B.6 of this final rule. DOE also estimates the economic value of emissions reductions resulting from the considered TSLs, as discussed in section IV.L of this document.

g. Other Factors

In determining whether an energy conservation standard is economically justified, DOE may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII)) To the extent DOE identifies any relevant information regarding economic justification that does not fit into the other categories described above, DOE could consider such information under ''other factors.''

2. Rebuttable Presumption

As set forth in 42 U.S.C. 6295(o)(2)(B)(iii), EPCA creates a rebuttable presumption that an energy conservation standard is economically justified if the additional cost to the consumer of a product that meets the standard is less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable DOE test procedure. DOE's LCC and PBP analyses generate values used to calculate the effect potential amended energy conservation standards would have on the payback period for consumers. These analyses include, but are not limited to, the 3-year payback period contemplated under the rebuttable-presumption test. In addition, DOE routinely conducts an economic analysis that considers the full range of impacts to consumers, manufacturers, the Nation, and the environment, as required under 42 U.S.C. 6295(o)(2)(B)(i). The results of this analysis serve as the basis for DOE's evaluation of the economic justification for a potential standard level (thereby supporting or rebutting the results of any preliminary determination of economic justification). The rebuttable presumption payback calculation is discussed in section IV.F of this final rule.

E. Compliance Date

The compliance date is the date when a covered product is required to meet a new or amended standard. In the August 2016 NOPR, DOE proposed a compliance period of two year following the publication date of a final UPS

standard, which would result in a 2019 compliance date.

CA IOUs suggested that DOE align the compliance date for the UPS energy conservation standards with the June 2018 battery charger standards compliance date. (CA IOUs, No.0016 at p.1) After considering this recommendation, DOE believes that a two-year compliance interval is necessary to ensure that manufacturers have sufficient time to comply with the standards DOE is adopting for UPSs. UPSs were considered in the initial battery charger rulemaking efforts, which set a two year compliance period, and DOE feels that adopting an identical two year compliance period in this rulemaking is appropriate. 81 FR 38266.

CA IOUs additionally stated their understanding that the current California Title 20 UPS standards will remain in effect in California until the compliance date for the federal UPS standards in 2019. (CA IOUs, No.0016 at p.2) DOE clarifies that state energy conservation standards for UPSs prescribed or enacted before publication of this final rule, will not be preempted until the compliance date of the Federal energy conservation standards for UPSs. (42 U.S.C. 6295(ii)(1)) DOE further notes that the final DOE test procedure for UPSs preempts any state regulation regarding the testing of the energy efficiency of UPSs. See 42 U.S.C. 6297(a)(1).

F. General Comments

During the September 16, 2016 public meeting, and in subsequent written comments responding to the NOPR, stakeholders provided input regarding general issues pertinent to the rulemaking, such as issues regarding the proposed standard levels. These issues are discussed in this section.

1. Proposed Standard Levels

Schneider Electric disagreed with DOE's proposed standards, stating that the combination of broad scope and excessive minimum requirements, particularly for VI UPSs, will likely result in less consumer choice and a higher cost of compliance than estimated by DOE. (Schneider Electric, No. 0017 at p. 3) Schneider Electric also expressed concern that the proposed standard for VI UPSs is higher than that of VFD UPSs. (Schneider Electric, No. 0017 at p. 15) In contrast, ASAP et al. recommended that DOE adopt TSL 3 instead of TSL 2, in order to increase energy savings. They noted that TSL 3 would increase FFC energy savings by 6.8 percent and CO_2 savings by 6.4 percent. ASAP et al. believe that DOE's proposal of TSL 2 over TSL 3 is influenced by overly conservative assumptions in its analysis. (ASAP et al., No. 0020 at pp. 1–2)

The Department appreciates the stakeholder comments with regard to its proposed standards. In selecting a given standard, DOE must choose the level that achieves the maximum energy savings that is determined to be technologically feasible and economically justified. In making such a determination, DOE must consider, to the extent practicable, the benefits and burdens based on the seven criteria described in EPCA (see 42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII)). DOE's weighing of the benefits and burdens based on the final rule analysis and rationale for the standard selection is discussed in section V of this document. With regard to TSL 3, DOE notes that the NOPR analysis showed a negative net present value using a 7 percent discount rate for VFD UPSs at TSL 3, and marginally negative average LCC savings for VFD UPSs at TSL 3.[14] For this reason, DOE determined in the NOPR that TSL 3 was not economically justified.

IV. Methodology and Discussion of Related Comments

This section addresses the analyses DOE has performed for this rulemaking with regard to UPSs. Separate subsections address each component of DOE's analyses.

DOE used several analytical tools to estimate the impact of the standards adopted in this document. The first tool is a spreadsheet that calculates the LCC savings and PBP of potential amended or new energy conservation standards. The national impacts analysis uses a second spreadsheet set that provides shipments projections and calculates national energy savings and net present value of total consumer costs and savings expected to result from potential energy conservation standards. DOE uses the third spreadsheet tool, the Government Regulatory Impact Model (GRIM), to assess manufacturer impacts of potential standards. These three spreadsheet tools are available on the DOE website for this rulemaking: *http://www.regulations.gov/#!docketDetail;D=EERE-2016-BT-STD-0022.* Additionally, DOE used output from the latest version of the Energy Information Administration's (EIA's) *Annual Energy Outlook* (*AEO*) for the emissions and utility impact analyses.

[14] See chapters 8 and 10 of the NOPR technical support document, available at: *https://www.regulations.gov/document?D=EERE-2016-BT-STD-0022-0001.*

A. Market and Technology Assessment

DOE develops information in the market and technology assessment that provides an overall picture of the market for the products concerned, including the purpose of the products, the industry structure, manufacturers, market characteristics, and technologies used in the products. This activity includes both quantitative and qualitative assessments, based primarily on publicly-available information. The subjects addressed in the market and technology assessment for this rulemaking include (1) a determination of the scope of the rulemaking and product classes, (2) manufacturers and industry structure, (3) existing efficiency programs, (4) shipments information, (5) market and industry trends, and (6) technologies or design options that could improve the energy efficiency of UPSs. The key findings of DOE's market assessment are summarized in this section IV.A. See chapter 3 of the final rule TSD for further discussion of the market and technology assessment.

1. Scope of Coverage and Product Classes

In the August 2016 NOPR, DOE proposed to maintain the scope of coverage for UPS energy conservation standards as defined by its proposal for the UPS test procedure. 81 FR 52206.

NEMA and ITI contended that DOE has misclassified UPSs as battery chargers and that the primary function of UPSs is equipment protection rather than charging batteries. A majority of UPSs fall outside the scope of the standalone battery charging systems and therefore should not be defined as battery chargers. (NEMA and ITI, No. 0019 at p. 2) As explained in section III.A of the UPS test procedure NOPR published on May 19, 2016, DOE notes that UPSs meet the statutory definition of battery charger as stated in 10 CFR 430.2. UPSs may provide various types of power conditioning and monitoring functionality depending on their architecture and input dependency. They also maintain the fully-charged state of lead acid batteries with high self-discharge rates so that in the event of a power outage, they are able to provide backup power instantly to the connected load. Maintaining the lead acid battery therefore directly affects a UPS's overall energy efficiency. In 10 CFR 430.2, a battery charger is defined as a device that charges batteries for consumer products. The definition of battery charger does not state that the primary function of the device must be to charge batteries for consumer

products. Because UPSs that are in the scope of this rulemaking maintain lead acid batteries, DOE concludes that UPSs meet the definition of battery charger. 81 FR 31545.

During the public meeting held on September 16, 2016, Schneider Electric noted that households in the North America are generally wired for 12A at 120V, which gives them an approximate upper power limit of 1440W. Schneider Electric requested that DOE limit the scope of UPS rulemaking to a rounded up value of 1500W. (Schneider Electric, Pub. Mtg. Tr., No. 0014 at pp. 12–13) DOE notes that the December 12, 2016 UPS test procedure final rulemaking revised the scope of the UPS test procedure based on stakeholder comments received on the UPS test procedure NOPR. The UPS test procedure only applies to UPSs that use battery(s) as their energy storage systems, use a standardized NEMA 1–15P or 5–15P input plug and have an AC output. 81 FR 89806. NEMA 1–15P or 5–15P input plugs are capable of handling up to 15A at 125V, which gives them an upper power limit of 1875 W. In subsequent written comments since the public meeting, both NEMA and ITI, and Schneider Electric have expressed implicit support in favor of DOE's adoption of NEMA 1–15P and 5–15P input plugs to limit the scope of UPS rulemaking, but have requested that this limitation be added to both the test procedure and energy conservation standards. (NEMA and ITI, No. 0019 at p. 4; Schneider Electric, No. 0017 at p. 1) DOE agrees with NEMA and ITI and Schneider Electric and is therefore updating the scope such that any product that meets the definition of a UPS, utilizes a NEMA 1–15P or 5–15P input plug and has an AC output is covered under the energy conservation standard being adopted in this final rule. DOE notes that this harmonizes with the scope of the recent UPS test procedure. 81 FR 89806.

Philips Lighting requested that DOE clarify whether the proposed energy conservation standards only apply to consumer UPSs. Further, Philips Lighting requested DOE to state that emergency UPS systems, *i.e.* those listed in UL 924 *Standard for Emergency Lighting and Power Equipment,* are non-consumer products and are not subject to the proposed energy conservation standards. (Philips Lighting, No. 0022 at p. 1) Lastly, Philips Lighting inquired if certain lighting products such as lighting inverters and backup battery systems will be subject to the proposed energy conservation standards. (Philips Lighting, Pub. Mtg. Tr., No. 0014 at pp. 68–69)

DOE notes that its authority to implement energy conservation standards for battery chargers under EPCA extends only to consumer products. Thus, this rule applies to those UPSs that are of a type which, to any significant extent, are distributed into commerce for personal use or consumption. See 42 U.S.C. 6291(1). Additionally, the battery charger energy conservation standards, of which the UPS energy conservation standards are a subset, explicitly exclude from scope all back-up battery chargers except those that meet the definition of a UPS, utilize battery(s) as their energy storage system, use a standardized NEMA 1–15P or 5–15P input plug and have an AC output.

2. Technology Options

In the July 2014 computer and battery backup systems (computer systems) framework document, DOE identified three technology options for UPSs that would be expected to improve the efficiency of UPSs. The technologies options are: semiconductor improvements, digital signal processing and space vector modulation, and transformer-less UPS topologies.[15] Since the July 2014 framework document for computer systems, DOE has identified the following additional technology options from stakeholder comments and manufacturer interviews for UPSs: use of core materials with high magnetic permeability such as Sendust and Litz wiring in inductor design, wide band gap semiconductors such as silicon carbide and gallium arsenide, capacitors with low equivalent series resistance (ESR), printed circuit boards (PCBs) with higher copper content, and variable speed fan control.

DOE's further research into space vector modulation technology for UPSs has shown that it may have limited advantage in the scope of this rule and is intended primarily for higher power applications. Therefore, DOE did not consider this technology.

After identifying all potential technology options for improving the efficiency of UPSs, DOE performed the screening analysis (See section IV.B of this document and chapter 4 of the Final Rule TSD) on these technologies to determine which to consider further in the analysis and which to eliminate.

B. Screening Analysis

DOE uses the following four screening criteria to determine which technology options are suitable for further consideration in an energy conservation standards rulemaking:

(1) *Technological feasibility.* Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production and reliable installation and servicing of a technology in commercial products could not be achieved on the scale necessary to serve the relevant market at the time of the projected compliance date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility or product availability.* If it is determined that a technology would have significant adverse impact on the utility of the product to significant subgroups of consumers or would result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the United States at the time, it will not be considered further.

(4) *Adverse impacts on health or safety.* If it is determined that a technology would have significant adverse impacts on health or safety, it will not be considered further.

10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b)

In sum, if DOE determines that a technology, or a combination of technologies, fails to meet one or more of the above four criteria, it will be excluded from further consideration in the engineering analysis. The reasons for eliminating any technology are discussed in the subsequent sections of this preamble.

The subsequent sections include comments from interested parties pertinent to the screening criteria, DOE's evaluation of each technology option against the screening analysis criteria, and whether DOE determined that a technology option should be excluded (''screened out'') based on the screening criteria.

1. Screened-Out Technologies

Transformer-Less UPS designs

Transformer-less UPS designs offer some of the highest efficiencies in the industry with lowered weight, wider input voltage tolerances, near unity input power factor, reduced harmonic distortion and need for components that mitigate electromagnetic interference (EMI) generated by the device. However, interviews with manufacturers have shown this to be a limited access

[15] *See* July 2014 computer and battery backup systems framework document, pp. 48–49.

technology with select manufacturers holding the intellectual property required for effective implementation. DOE therefore did not consider this technology for this rule.

2. Remaining Technologies

Through a review of each technology, DOE tentatively concludes that all of the other identified technologies listed in section IV.A.2 of this document met all four screening criteria to be examined further as design options in DOE's final rule analysis. In summary, DOE did not screen out the following technology options: use of materials with high magnetic permeability such as Sendust for the inductor core and Litz wiring in indictor coils, silicon carbide, gallium arsenide and other wide band gap semiconductors, capacitors with low ESR, PCBs with higher copper content and variable speed fan control.

DOE determined that these technology options are technologically feasible because they are being used or have previously been in commercially-available products or working prototypes. DOE also finds that all of the remaining technology options meet the other screening criteria. For additional details, see chapter 4 of the Final Rule TSD.

NEMA and ITI contended that the remaining technology options combined will result in less than one percent increase in UPS efficiency at optimum performance and the burden of redesigning and testing for sub-percent improvement in UPS efficiency is not justified. (NEMA and ITI, No. 0019 at pp. 5–6) Schneider Electric argued that of all the remaining technologies, only higher copper content in PCBs and line cords has the potential of offering significant improvement in UPS efficiency only at the 100 percent loading point, which accounts for 30 percent of the average load adjusted efficiency. Further, Schneider Electric noted DOE is effectively limiting market participation to companies who own or have access to the fundamental intellectual property required to produce high efficiency UPSs by pushing UPS energy efficiency requirements well above the ENERGY STAR requirements. (Schneider Electric, No. 0017 at p. 3)

DOE notes that all remaining technology options were identified in consultation with manufacturers and other interested parties. These parties identified all remaining technology options as viable options for improving UPS efficiencies across all three product classes. Thus, while these remaining technologies may have varying effects on UPS efficiencies in each of the three product classes, DOE disagrees with Schneider Electric's written comment that only higher copper content in PCBs will likely create significant UPS efficiency gains and that all remaining technology options combined will improve UPS efficiency by less than one percent. Further, DOE notes that all remaining technology options satisfied the screening criteria, which ensures that the technology options are not protected by intellectual property laws and are readily available to all UPS manufacturers. Manufacturers may use any of the remaining technology options or their combination to improve the average load adjusted efficiencies of their UPS basic models. Lastly, DOE points out that per a stakeholder comment from ICF International at the September 16, 2016 public meeting, 78% of all UPS available in commerce are ENERGY STAR compliant, which demonstrates that technology options required to attain high levels of energy efficiency are readily available to multiple UPS manufacturers. (ICF, Pub. Mtg. Tr., No. 0014 at p. 24)

NEMA and ITI noted that VFD and VI UPSs typically do not have constantly rotating fans and argued that variable speed fan control technology will have limited effect on VFD and VI UPS efficiencies. Further, NEMA and ITI argued that wide band gap semiconductors are only useful in VFI UPS design with little usefulness in VI UPS designs and no usefulness in VFD UPS designs. NEMA and ITI contended that wide band gap semiconductors typically offer 0.25 percent improvement in UPS efficiency in applicable designs while costing up to three times more than traditional semiconductors. Lastly, NEMA and ITI argued that the use of Sendust and Litz wiring is limited to transformer-less UPS designs, which are not being pursued due to intellectual property limitations and requested that DOE consult with DOJ if the use of such designs is pursued. (NEMA and ITI, No. 0019 at p. 5)

DOE notes that of all the representative units across all three product classes, only the representative unit corresponding to EL 0 for VFI UPSs utilized variable speed fan control. None of the other representative units, including those used to generate EL 1 and EL 2 for VFI UPSs, utilized variable speed fan control or wide band gap semiconductors. While these two technology options were identified in consultation with manufacturers and other interested parties as viable options for improving UPS efficiencies across all three product classes, the efficiency levels being adopted in this final rule can be achieved without these two technology options as demonstrated by the representative units in VFD and VI UPS product classes. DOE disagrees with NEMA and ITI's claim that Sendust and Litz wiring technology options are limited to transformer-less UPS designs. UPSs across all three product classes incorporate a battery charger to keep their internal batteries fully charged. At the least, Sendust and Litz wiring may be used in the core and winding of transformers and inductors in these battery chargers to improve its efficiency which will improve the overall UPS efficiency.

Lastly, NEMA and ITI noted that some of the remaining technology options coupled with the high proposed energy conservation standards will tread into patent-protected areas, potentially lessening competition. NEMA and ITI noted that DOE is obliged to consult with DOJ regarding the potential competition effects and marketplace issues. (NEMA and ITI, No. 0019 at p. 16) As explained in section IV.B, DOE identified these technologies in consultation with manufacturers and other interested parties. These technology options have been screened for intellectual property protection and are readily available to all UPS manufacturers. Therefore, DOE disagrees with the stakeholder claim that these technology options will tread into patent-protected areas. Further, DOJ concluded that the proposed energy conservation standards for UPSs are unlikely to have a significant adverse impact on competition. DOJ's assessment letter is attached to the end of this rule.

C. Engineering Analysis

In the engineering analysis, DOE establishes the relationship between the manufacturer production cost (MPC) and improved UPS efficiency. This relationship serves as the basis for cost-benefit calculations for individual consumers, manufacturers, and the Nation. DOE typically structures the engineering analysis using one of three approaches: (1) Design option, (2) efficiency level, or (3) reverse engineering (or cost assessment). The design-option approach involves adding the estimated cost and associated efficiency of various efficiency-improving design changes to the baseline product to model different levels of efficiency. The efficiency-level approach uses estimates of costs and efficiencies of products available on the market at distinct efficiency levels to develop the cost-efficiency relationship. The reverse-engineering approach involves testing products for efficiency

and determining cost from a detailed bill of materials (BOM) derived from reverse engineering representative products. The efficiency ranges from that of the least-efficient UPS sold today (*i.e.,* the baseline) to the maximum technologically feasible efficiency level. At each efficiency level examined, DOE determines the MPC; this relationship is referred to as a cost-efficiency curve.

DOE used a combination of the design-option and efficiency-level approach when determining the efficiency curves for UPSs. UPSs are composed of a single highly integrated PCB consisting of control and power conversion circuitry without any interchangeable components. The efficiency-level approach therefore is more suited to creating the cost-efficiency relationship since components cannot be removed to understand their impact on overall power consumption. However, DOE did use the design-option approach to determine the maximum technologically feasible EL because these products are not available on the market currently.

DOE began its analysis by completing a comprehensive study of the market for units that are in scope. A review of retail sales data, the ENERGY STAR qualified product list of compliant devices and manufacturer interviews aided DOE in identifying the most prevalent units in the market as well as those that are the least and most expensive and efficient. DOE then used a combination of purchased units for in-house efficiency testing as well as efficiency data directly from the ENERGY STAR database of compliant devices. The data from testing and the ENERGY STAR database allowed DOE to choose representative units and create multiple ELs for each product class.

1. Testing

In taking the hybrid efficiency-level and design option approach, DOE chose multiple units of the same product class striving to ensure variations between successive units (*e.g.* LCDs, communication ports, etc.) were removed. The resultant efficiency values and data obtained from manufacturers were then curve-fitted and extrapolated to the entire power range (defined by the scope) to create multiple ELs. For example, DOE tested several VFD representative units and identified additional ones from the ENERY STAR data in the 300–500W range to create four ELs for VFD UPSs, which when compared against the device's MPC demonstrated a direct positive correlation.

NEMA and ITI and Schneider Electric noted that because of differences between DOE's proposed test procedure and ENERGY STAR's test procedure for UPSs, DOE must adjust the average load adjusted efficiency of representative units whose efficiency data were collected from ENERGY STAR data by 0.2 to 0.4 percent. (NEMA and ITI, No. 0019, pp. 9–10, Schneider Electric, No. 0017 at p. 15) Similarly, during the public meeting held on September 16, 2016, ICF International stated that the differences between the two test procedures would produce a variance between 0.1 to 0.3 percent in the average load adjusted efficiency of UPSs. (ICF International, Pub. Mtg. Tr., No. 0014 at pp. 93). NEMA and ITI requested in written comments that if the DOE persists on pursuing the strict ELs as proposed in the NOPR, DOE must either mathematically determine the impacts of the proposed new UPS test procedure and adjust the ENERGY STAR data accordingly or undertake an extensive amount of additional physical testing and base the standard on these new data. (Schneider Electric, No. 0019 at p. 2)

DOE identifies in Table IV–1 the representative units that were tested as well as those whose efficiency values were collected from the ENERGY STAR database. DOE has revised its analysis for all ELs identified in Table IV–1 for which the efficiency value of representative units were collected from the ENERGY STAR database to account for the differences between DOE's test procedure and the ENERGY STAR test procedure for UPSs. Further, Table IV–1 shows that among the ELs proposed as energy conservation standards during the NOPR and finalized in this rulemaking, EL 1 for VFD UPSs and EL 1 for VI UPSs use a representative unit where the efficiency value was collected from the ENERGY STAR database and therefore did not have a battery connected during test. DOE is adopting the EL 1 for VFD UPSs and EL 1 for VI UPSs but notes that because DOE has revised its analysis to account for the differences between DOE's test procedure and the ENERGY STAR test procedure for UPSs, the standard equations have been slightly altered. For VFI UPSs, DOE is finalizing the proposed standard equation at EL 1 because the representative units for this EL was tested using DOE's proposed test procedure which automatically captures the losses due to a connected battery, and thus, no adjustments are necessary. The test data and the corresponding analysis for this EL therefore does not require an update.

TABLE IV–1—TEST PROCEDURE USED FOR EACH REPRESENTATIVE UNIT

Product class	EL 0	EL 1	EL 2	EL 3
VFD UPS	DOE	ENERGY STAR	DOE	Not Applicable.
VI UPS	DOE	ENERGY STAR	DOE	Not Applicable.
VFI UPS	DOE	DOE	ENERGY STAR	Not Applicable.

2. Representative Units and Efficiency Levels

Individual ELs for a UPS product class were created by curve-fitting and extrapolating the efficiency values of either a test unit or that of a unit identified from the ENERGY STAR database as explained in the previous section, IV.C. Each of the ELs are labeled EL 0 through EL 3 and reflect increasing efficiency due to technological advances. EL 0 represents baseline performance, EL 1 is described as the minimum required efficiency to be ENERGY STAR compliant, EL 2 is the best technology currently available in the market and EL 3 is the maximum efficiency theoretically achievable. As such, a representative unit for EL 0 was selected from the least efficient market segment of a particular product class. EL 1 and EL 2 were then represented by the least and most efficient ENERGY STAR unit respectively in the same power range. While DOE derived EL 0 through EL 2 via testing and using the online ENERGY STAR database, DOE created EL 3 from data obtained during manufacturer interviews.

Schneider Electric disagreed with DOE's approach of deriving an EL extending to the entire output power range of the scope based on the test result of a single representative unit. Schneider Electric further contended that DOE's selection of representative units appears arbitrary, that the corresponding ELs fail to account for fixed core losses that dominate at lower

output power ranges and the shape of the ELs in all three product classes does not align with either the data provided by DOE or the ENERGY STAR database. Similarly, NEMA and ITI argued that the DOE offers no proof of why a curve makes more sense, or why it offers sufficient improvement over the well-established flat-bar requirements of ENERGY STAR. NEMA and ITI also argued that a curve based approach unfairly prejudices products that have a slightly lower efficiency because they are satisfying consumer demanded secondary functions like USB charge ports, wireless connectivity etc. Schneider Electric also argued that DOE's data set appears statistically insignificant in terms of the number of units tested, feature sets and power levels when compared to the consumer UPS market and underrepresents UPSs with rated output powers less than 300W, which incur higher fixed losses. Specifically, Schneider Electric disagreed with DOE's methodology of determining ELs for VFD UPSs with rated output power greater than 700W, VI UPSs with rated output power less than 300W, and VFI UPSs with rated output power less than 700W without testing UPSs in these output power ranges. If DOE were to select and test representative units in these ranges, Schneider Electric asserted DOE would find that there are not enough models in the marketplace for all UPSs under 300W, VFD UPSs greater than 1000W and VFI units under 600W to establish statistically valid baselines from which to derive requirements. However, Schneider Electric did note other units with lower efficiencies among DOE's test data set that had a lower average weighted efficiency and these would have been more suited as the representative unit for baseline efficiency, EL 0. (NEMA and ITI, No. 0019 at pp. 6–7; Schneider Electric, No. 0017 at pp. 2, 4, 6–9; Schneider Electric, Pub. Mtg. Tr., No. 0014 at pp. 50–51)

As explained earlier in this section, DOE did not select representative units nor establish ELs based on a statistical analysis of the efficiency distributions of the UPS market. DOE selected representative units on the basis of a unit's ability to achieve a certain average load adjusted efficiency at a particular cost while ensuring that the technology used to arrive at that efficiency passes DOE's screening analysis and is readily available to all manufacturers. In selecting representative units, DOE intentionally strived to minimize additional feature sets so that they would have minimal impact on the unit's efficiency measurement. Similarly, DOE attempted to keep the output power range constant between successive representative units of the same product class, ensuring that the resultant efficiency levels can be reasonably compared to one another without additional variables. Therefore, contrary to Schneider Electric's comment, DOE's selection of representative units were not arbitrary and were carefully selected.

Further, in measuring the input and output powers of a single representative unit at multiple loading points, DOE also effectively captured the energy performance of UPSs across the entire output power range. For example, measuring a 400W VFD UPS at 25% load successfully captures how fixed losses dominate at lower power levels. DOE's proposed ELs, each of which was derived using a single representative unit, is shown in Figure IV–1 through Figure IV–3. The shape of these ELs demonstrate less stringent efficiency requirements at lower output power levels since high efficiency values are harder to achieve where fixed losses dominate. DOE therefore believes that its use of a single representative unit to derive ELs for the entire output power range of the scope is accurate and reiterates that the ELs were not generated to conform to all the units tested by DOE for the NOPR analysis or to the publically available ENERGY STAR database. To expect the ELs to align with these data is to have misunderstood how DOE's engineering analysis and testing were performed. Finally in response to NEMA and ITI's comment regarding a preference for a flat line standard similar to that of ENERGY STAR, DOE believes that would be inaccurate in that it would treat UPSs of all power ranges equally, incentivizing secondary features across certain power ranges while excluding them from others.

While DOE did not derive ELs using statistical analysis of the efficiency distribution of the UPS market, DOE did use efficiency distribution data in its downstream analyses to evaluate what proportion of the UPS market would shift in response to a certain EL as well as each EL's cost and benefit to the individual consumer, the manufacturer and the Nation.

Lastly, in response to Schneider Electric's argument that there are units among DOE's dataset with a lower average load adjusted efficiency than the ones selected by DOE as representative units for establishing EL 0 for VFD and VI UPSs, DOE clarifies that while EL 0 establishes a baseline, its intention is not to represent the absolute least efficient units in the marketplace. Instead EL 0 simply represents a market segment that demonstrates a generally lower efficiency trend and the bulk of UPS shipments below EL 1. This is because, in the absence of preexisting Federal energy conservation standards, which is the case for UPSs, the absolute least efficient unit available in the market can be as inefficient as a certain UPS manufacturer desires, making it an outlier instead of a representation of the general least efficient market segment. Therefore, selecting the least efficient units found in commerce as EL 0 representative units is not an accurate representation of the general least efficient market segment.

Figure IV–1 through Figure IV–3 are graphical representations of the ELs for VFD UPS, VI UPS and VFI UPS types respectively.[16] Each EL is subdivided into power ranges for simplicity and is a piecewise approximation of the unit's overall efficiency across the entire power range as shown in the figures. Chapter 5 of the Final Rule TSD has additional detail on the curve-fit equations for each EL and UPS product class.

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[16] These figures are also available in Docket No. EERE–2016–BT–STD–0022

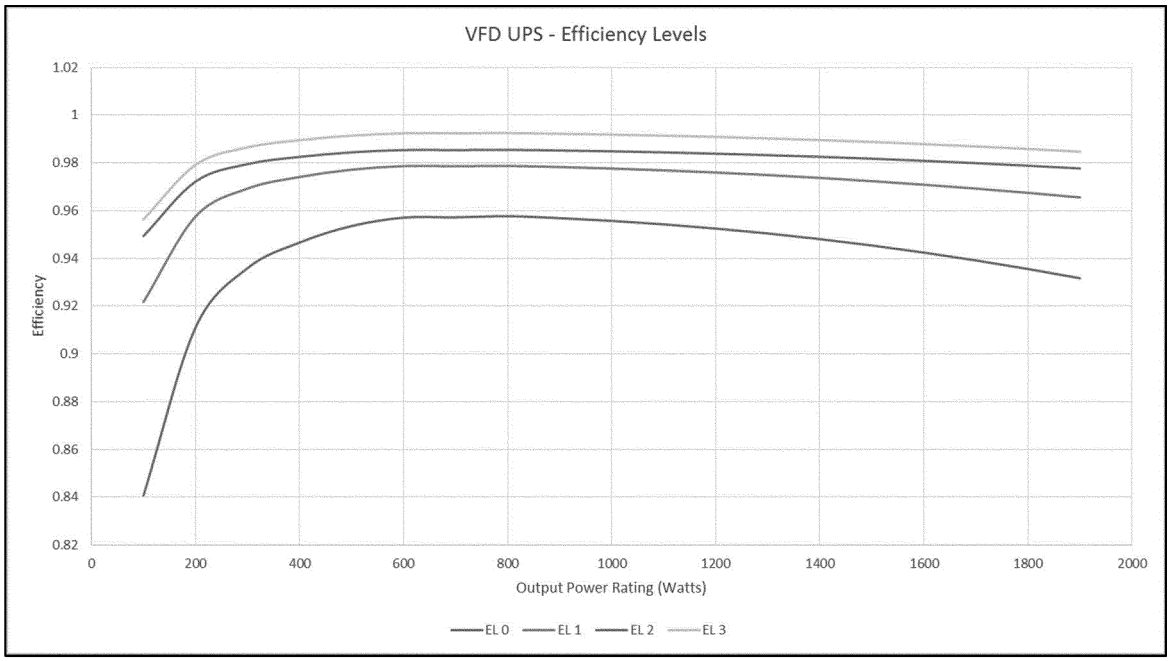

Figure IV-1 Graphical Representation of VFD UPS Efficiency Levels

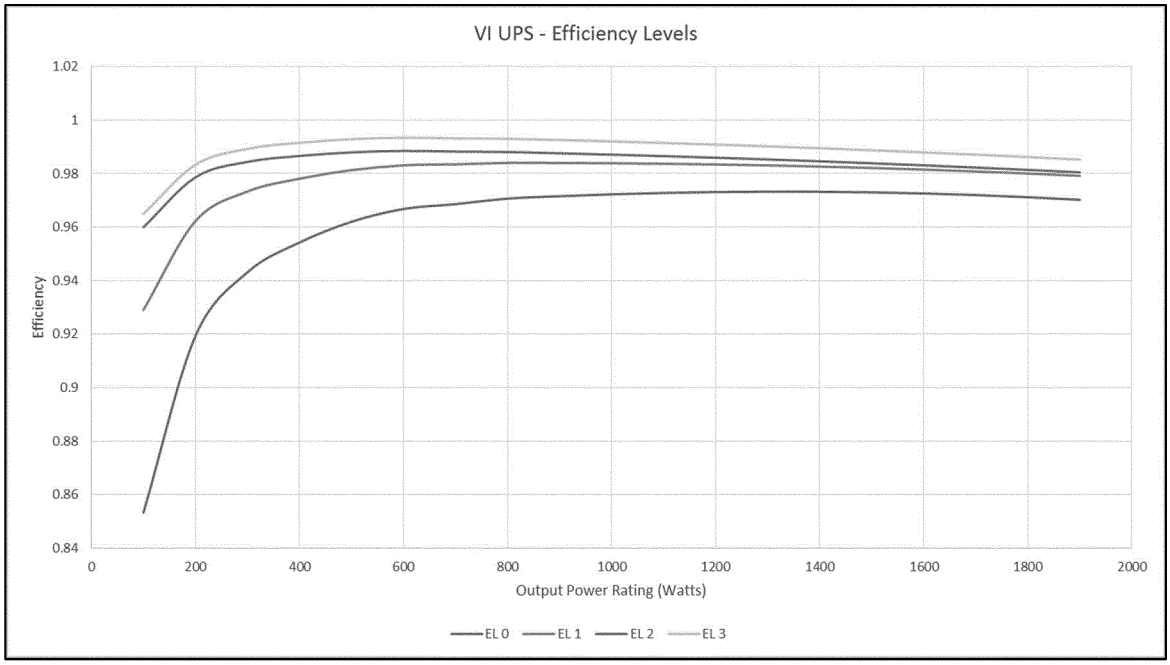

Figure IV-2 Graphical Representation of VI UPS Efficiency Levels

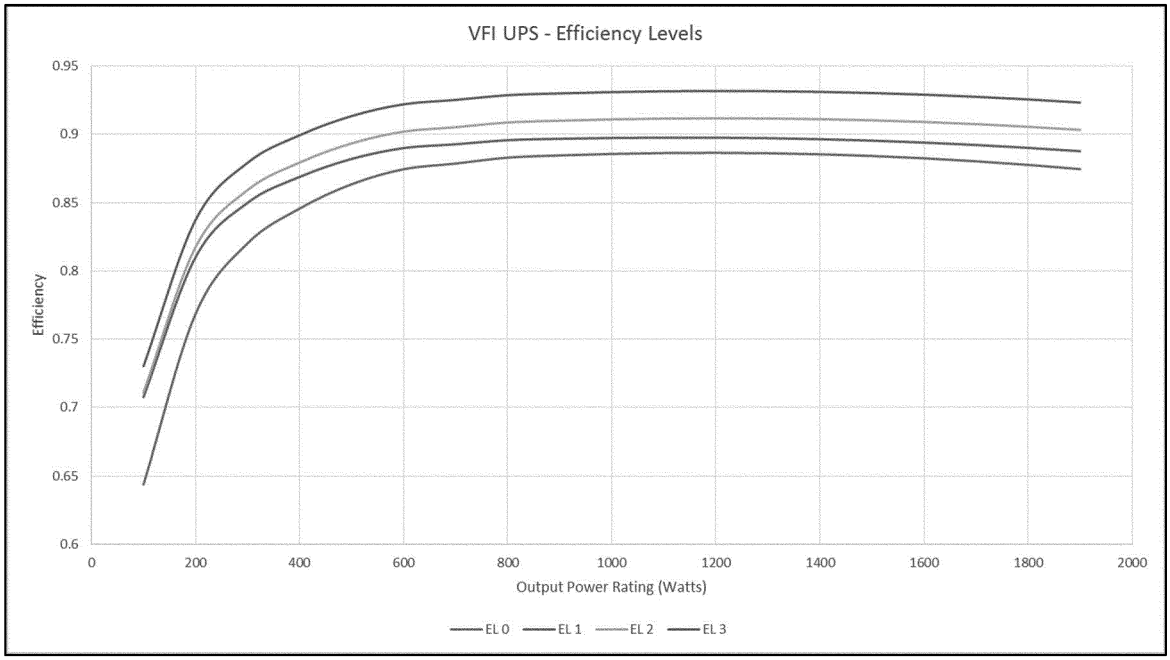

Figure IV-3 Graphical Representation of VFI UPS Efficiency Levels

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Schneider Electric noted that five VFD UPSs tested by DOE pass DOE's proposed energy conservation standard for the VFD UPS product class within the margin of gauge R&R variances for the test equipment at Schneider Electric, indicating a marginal failure. Further, Schneider Electric noted that none of the VI UPS units tested by DOE as part of the NOPR analysis or any of the compliant VI UPSs with rated output power less than 1000W listed in the ENERGY STAR database meet DOE's proposed EL 2 for the VI UPS product class. Schneider Electric argued that adoption of EL 2 for the VI UPS product class will eliminate VI UPSs with rated output powers less than 1000W, which

would be a violation of clause 325(o)(4) of EPCA. Lastly, Schneider Electric argued that there is no evidence in the NOPR TSD or the ENERGY STAR database to support that VFI UPSs with rated output powers less than 700W will pass DOE's proposed EL 1 for the VFI UPS product class. (Schneider Electric, No. 0017 at pp. 4, 9–10, 11–12)

DOE notes that that compliance certification sampling provisions outlined in 10 CFR part 429 provide the necessary allowance in certified rating to accommodate small part to part variations such as gauge R&R variances. In response to Schneider Electric's comment that none of the units tested by DOE passes the proposed standard, DOE clarifies that this is due to the best-fit curves overshooting at certain data points resulting in a set of equations that are marginally more stringent than intended by as much as one-tenth of a percent. Among the test data published in the August 2016 NOPR were the efficiency values for the VI UPS EL 2 representative unit. Because EL 2 for VI UPSs was created using this representative unit's efficiency values, the unit itself would only pass the standard if it remained exactly as derived. However, due to the over approximation by the best fit curves as explained above, the EL appeared more stringent at certain data points causing the representative unit to demonstrate a marginal fail. DOE has adjusted the standard equations to account for this over approximation in this final rule which will resolve the issue with the EL 2 representative unit not passing the very EL it helped create. Additionally, the lack of a VI UPS unit in the ENERGY STAR database does not necessarily mean products that can achieve the required efficiency does not exist in the marketplace. ENERGY STAR is a voluntary program with stringent testing and compliance requirements, which manufacturers may not choose to undergo. The EL 2 representative unit for VI UPSs is again such an example. Similarly, as of October 10, 2016, there are five compliant VFI UPSs in the ENERGY STAR database under 700W, of which three units pass the EL 1 standard for VFI UPSs with significant margin to account for differences between DOE's test procedure and ENERGY STAR's. This refutes Schneider Electric's argument that there are currently no VFI UPSs under 700W in the ENERGY STAR database and continues to demonstrate that technology options are readily available to UPS manufacturers to produce VFI UPSs that meet DOE's adopted energy conservation standard.

It is also important to note that, In addition to the changes made to the analysis discussed in the previous two sections, IV.C.1 and IV.C.2, DOE updated its analysis with AEO2016 data as explained in section IV.H.2. In selecting a given standard, DOE must choose the level that achieves the maximum energy savings that is determined to be technologically feasible and economically justified. In making such a determination, DOE found that TSL 2 is no longer economically justified as a result of the above changes. Therefore, as described in section V.C, DOE is adopting TSL 1 in this final rule, which includes a less stringent standard for VI UPSs than initially proposed, and accordingly alleviates objections from Schneider Electric on the stringency of the proposed level for this product class.

Schneider Electric and NEMA and ITI also requested that DOE thoroughly examine the performance of secondary features that are unrelated to battery charging. All three stakeholders commented that these secondary features which include services such as USB charging ports, wired and wireless connectivity, displays, communications and other functions provide significant added utility to the consumer and DOE risks eliminating these consumer demanded utilities from UPS products by only considering cost versus electrical efficiency relationship. Further Schneider Electric provided a list of these consumer requested features along with what their corresponding allowance should be and proposed an alternate adjusted efficiency metric that accommodates the suggested allowances in place of the average load adjust efficiency metric proposed by DOE in the UPS test procedure. (NEMA and ITI, No. 0019 at pp. 3; Schneider Electric, No. 0017 at pp. 1–2, 13)

After careful review of the stakeholder comments summarized above, DOE is including provisions in the UPS test procedure to allow the limiting of secondary features that do not contribute to the maintenance of fully charged battery(s) or delivery of load power, similar to the provisions in place in the test procedure for all other battery chargers. See the December 12, 2016 UPS test procedure final rulemaking. 81 FR 89806. This will allow manufacturers to disable these secondary features in order to reduce or eliminate the impact that the energy consumption of these features has on the measured efficiency metric. However, DOE is not adopting the proposed alternative calculation that Schneider Electric proposed at this time. DOE does note that there are provisions in place, as outlined in 10 CFR 430.27, for an interested party to submit a petition for a test procedure waiver for a basic model of a covered product if the basic model's design prevents it from being tested according to the test procedure or if the results of the test procedure yield materially inaccurate or unrepresentative comparative data. When a waiver or interim waiver is granted, manufacturers are permitted to use an alternative test method to evaluate the performance of their product type in a manner representative of the energy consumption characteristics of the basic model. Accordingly, manufacturers may pursue this approach to petition DOE to allow the use of an alternative test method, which may include an alternative method for calculating the efficiency metric used to certify compliance with applicable energy conservation standards. More information on the waiver process is available on DOE's website: *http://energy.gov/eere/buildings/test-procedure-waivers.*

3. Cost Analysis

For UPSs, DOE developed average manufacturer and distribution markups for ELs by examining the annual Securities and Exchange Commission (SEC) 10–K reports filed by publicly-traded UPS manufacturers and distribution chains and further verified during stakeholder interviews. DOE used these validated markups to convert consumer prices into manufacturer selling prices (MSPs) and then into MPCs.

In general, DOE's cost analysis of representative units demonstrated a direct correlation between MPC and average load adjusted efficiency (see Figure 5.5.1 through 5.5.3 in chapter 5 of the Final Rule TSD). However, the one exception to this correlation was the EL 1 representative unit for VFD UPSs. This representative unit has a higher output power rating and average load adjusted efficiency, but a lower MPC compared to the EL 0 representative unit of the same product class.

In addition to the two representative units discussed here, DOE has found other VFD UPSs that demonstrate this negative correlation between MPC and average load adjusted efficiency between EL 0 and EL 1.

DOE believes that this exception to the otherwise direct correlation between MPC and average load adjusted efficiency of UPSs has several possible explanations. For the VFD UPSs in scope of this rulemaking, DOE believes consumers may typically be more concerned with the reliability of the

protection the product provides, than its energy efficiency. Despite the presence of less expensive and more efficient units, DOE believes less efficient legacy units continue to be sold in the marketplace because consumers are familiar with these models and trust the level of protection and safety they offer even if more energy efficient UPS models with similar functionality and dependability are available at lower prices. Additionally, an unproven model that is more efficient yet less expensive may be perceived by consumers as less reliable. This perceived negative correlation between reliability and price of UPSs may take away an incentive from UPS manufacturers to improve the design of these models that have established a reputation of being dependable. Further, DOE's own analysis and consultation with subject matter experts, and stakeholders comments have confirmed that increases in UPS efficiency using the technology options identified in section IV.B.2 will not negatively impact the reliability of the product.

It is also worth noting that the difference in MSP between the VFD UPS EL 0 and EL 1 representative units is $5.10 and while this can be significant on its own, it may only be a small fraction of the cost of the connected equipment that it is protecting or the potential loss in productivity if said connected equipment were to lose power. DOE believes this is one of the reasons why devices at EL 0 continue to exist in the market place at a price higher than more efficient EL 1 models.

However, negative costs are unexpected in an economic theory that assumes a perfect capital market with perfect rationality of agents having complete information. In such a market, because more efficient UPSs save consumers money on operating costs compared to the baseline product, consumers would have an incentive to purchase them even in the absence of standards. For these reasons, DOE discussed perceived lower reliability of less expensive models as a possible explanation for the exception to the otherwise direct correlation between MPC and average load adjusted efficiency of UPSs and requested comments on its understanding of why less efficient UPSs continue to exist in the market at a price higher than more efficient units. DOE also requested comments on the impact that energy conservation standards for UPSs will have on the costs and efficiencies of existing UPS models, including various aspects of the inputs to the installed cost analysis, such as assumptions about consumers' response to first cost versus long-term operating cost, assumptions for manufacturer capital and product conversion costs, and other factors.

NEMA and ITI responded to this request for comment by stating their agreement with DOE's analysis that less efficient VFD units continue to sell in the marketplace at a higher price due to perceived reliability. However, NEMA and ITI also stated that DOE did not analyze the high likelihood that these products include other features such as USB charging ports, wired and wireless connectivity, integrated on-board data displays, or other performance features in the NOPR TSD. Taken in this context, the DOE's statement can be followed to a logical conclusion that consumers will accept slightly lower efficiency and higher cost for greater functionality and utility. Similarly, Schneider Electric commented that less efficient UPSs continue to exist in the market at a higher price due to various factors such as but not limited to form factor, display functionality, legibility, outlet quantity, position, line cord length, battery runtime, surge protection rating, environmentally friendly materials and packaging, communication and software capability, brand reputation and reliability and product warranty. (NEMA and ITI, No. 0019 at p. 13; Schneider Electric, No. 0017 at p. 16)

DOE appreciates the feedback from NEMA and ITI and Schneider Electric and generally agrees with some of the features highlighted such as brand reputation, product warranty, form factor, materials and packaging as possible reasons for why less efficient units continue to exist in the market at a higher price. DOE has therefore kept the cost analysis intact from the NOPR.

D. Markups Analysis

The markups analysis develops appropriate markups (*e.g.,* retailer markups, distributor markups, contractor markups) in the distribution chain and sales taxes to convert the consumer prices, derived in the engineering analysis, into the MSPs for each product class and EL. The MSPs calculated in the markups analysis are then used as inputs to the MIA. The prices derived in the engineering analysis are marked up to reflect the distribution chain of UPSs. At each step in the distribution channel, companies mark up the price of the product to cover business costs and profit margin. For UPSs, the main parties in the distribution chain are retailers. The final prices, which also include sales taxes, are then used in the LCC and PBP analyses.

For retailers, DOE developed separate markups for baseline products (baseline markups) and for the incremental cost of more-efficient products (incremental markups). Incremental markups are coefficients that relate the change in the MSP of higher-efficiency models to the change in the retailer sales price. DOE relied on economic data from the U.S. Census Bureau [17] to estimate average baseline and incremental markups.

The manufacturer markups, which convert MSPs to MPCs are calculated as part of the MIA and are not presented in the markups analysis. DOE developed average manufacturer markups by examining the annual SEC 10–K reports filed by publicly traded UPS manufacturers then refining these estimates based on manufacturer feedback.

Chapter 6 of the final rule TSD provides details on DOE's development of markups for UPSs.

E. Energy Use Analysis

The purpose of the energy use analysis is to determine the annual energy consumption of UPSs at different efficiencies in representative U.S. single-family homes, multi-family residences, and commercial buildings, and to assess the energy savings potential of increased UPS efficiency. The energy use analysis estimates the range of energy use of UPSs in the field (*i.e.,* as they are actually used by consumers). The energy use analysis provides the basis for other analyses DOE performed, particularly assessments of the energy savings and the savings in consumer operating costs that could result from adoption of amended or new standards.

To develop energy use estimates, DOE multiplied UPS power loss as a function of rated output power, as derived in the engineering analysis, by annual operating hours. In the NOPR, DOE assumed that UPSs are operated for 24 hours per day, 365 days per year, at a typical load specific to each product class. DOE assumed average loading for VFD UPSs to be 25 percent, average loading for VI products to be 50 percent, and average loading for VFI products to be 75 percent.

CA IOUs agreed with DOE's loading assumption of 25% for VFD UPSs, but noted that existing computer usage data suggest this loading is likely to be low. Furthermore, CA IOUs disagreed with DOE's loading assumption of 50% for VI UPSs, arguing that these products are much more likely to be utilized with

[17] U.S. Census Bureau. Annual Retail Trade Survey, Electronics and Appliance Stores. 2012. *www.census.gov/retail/arts/historic_releases.html.*

servers instead of desktop computers, and that average loading is more likely to be similar to VFI UPS. CA IOUs requested DOE assume a similar loading assumption for VI UPSs as in the ENERGY STAR UPS specification. (CA IOUs, No. 0016 at pp. 2–3) In the absence of energy use field data for UPSs, Schneider supports the average loading conditions used in ENERGY STAR. (Schneider Electric, No. 0017 at p. 16)

In response to these comments, DOE has adjusted its loading assumptions for all product classes in the energy use analysis to match those in the ENERGY STAR UPS specification and in the DOE UPS test procedure. For VFD UPSs with rated output power of 1500 W or less, the weighted average loading assumption uses the following weights: 0.2 at 25 percent loading, 0.2 at 50 percent loading, 0.3 at 75 percent loading, and 0.3 at 100 percent loading. For all other UPSs, the weighted average loading assumption uses the following weights: 0.3 at 50 percent loading, 0.4 at 75 percent loading, and 0.3 at 100 percent loading. DOE agrees that little field data exist on the energy use of UPSs, and that in the absence of such data, it is preferable to rely upon the consensus loading assumptions agreed upon as part of the ENERGY STAR specification development.

CA IOUs additionally requested that DOE consider the efficiency degradation of UPSs which may occur over the lifetime of a product. Age-induced battery degradation and elevated self-discharge rates would lead to an increase in energy use with age. (CA IOUs, No. 0016 at p. 3) DOE notes that no data are available, nor were they submitted, on how the energy use of UPSs may change with age. Furthermore, it is possible to regularly replace UPS batteries over the lifetime of a UPS, eliminating the potential efficiency degradation due to an aging battery. The battery replacement cost is assumed to be the same across all efficiency levels in the analysis, and therefore was not included in the LCC analysis. For these reasons, DOE did not include efficiency degradation with age in its energy use analysis for the final rule.

CA IOUs further requested that DOE revise its energy use analysis to take into account the usage of UPSs that can act as mobile battery packs. CA IOUs contend that the energy usage of such devices is significantly different from other UPSs, since the device undergoes far more discharge cycles and is likely to operate more frequently with a partially discharged battery, increasing energy use. (CA IOUs, No. 0016 at pp. 4–5) DOE notes that devices that act only as a mobile battery pack, and are not designed to provide continuity of load in case of input power failure, do not meet the definition of a UPS. Additionally, any UPS that only has outputs providing direct current (*e.g.,* USB ports) is outside the scope of this rulemaking. Many products classified as mobile battery packs would therefore not be subject to energy conservation standards for UPSs. DOE's market analysis suggests that hybrid devices that meet the definition of a UPS, include AC outputs, and can additionally act as a mobile battery pack, constitute a very small minority of the total UPS market. There are a limited number of models meeting this description available on the market. Furthermore, these devices are far less likely to be regularly used as a mobile battery pack, given that removing the mobile battery pack (including the battery component) for remote device charging negates the UPS functionality of the device to provide continuity of load in case of input power failure. DOE assumes that consumers would only occasionally use the mobile battery pack with such devices. For these reasons, DOE believes that the energy usage of such devices is likely to be very similar to traditional UPSs, and has not adjusted its energy use analysis with respect to UPSs that can act as mobile battery packs.

EEI requested that the energy use analysis be revised to account for the energy consumption of the UPS components only, and not include the energy usage of connected loads. (EEI, No. 0021 at p. 4) DOE clarifies that its energy use analysis only considers the energy consumed by the UPS device itself, including energy conversion losses that occur while providing power to a connected load. The energy use analysis does not include energy that merely passes through the UPS. However, in order to calculate this energy consumption by the UPS, it is necessary to assume the energy going through the UPS to the connected end-use equipment. It is for this reason that DOE considers the type of connected equipment when determining the average loading condition assumptions. In the absence of any field data for UPSs, DOE is relying on the ENERGY STAR loading assumptions for the final rule.

To capture the diversity of products available to consumers, DOE collected data on the distribution of UPS output power rating from product specifications listed on online retail websites. DOE then developed product samples for each UPS product class based on a market-weighted distribution of product features found to impact efficiency as determined by the engineering analysis.

Chapter 7 of the final rule TSD provides details on DOE's energy use analysis for UPSs.

F. Life-Cycle Cost and Payback Period Analysis

DOE conducted LCC and PBP analyses to evaluate the economic impacts on individual consumers of potential energy conservation standards for UPSs. The effect of new or amended energy conservation standards on individual consumers usually involves a reduction in operating cost and an increase in purchase cost. DOE used the following two metrics to measure consumer impacts:

- The LCC (life-cycle cost) is the total consumer expense of an appliance or product over the life of that product, consisting of total installed cost (manufacturer selling price, distribution chain markups, sales tax, and installation costs) plus operating costs (expenses for energy use, maintenance, and repair). To compute the operating costs, DOE discounts future operating costs to the time of purchase and sums them over the lifetime of the product.
- The PBP (payback period) is the estimated amount of time (in years) it takes consumers to recover the increased purchase cost (including installation) of a more-efficient product through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost at higher efficiency levels by the change in annual operating cost for the year that amended or new standards are assumed to take effect.

For any given efficiency level, DOE measures the change in LCC relative to the LCC in the no-new-standards case, which reflects the estimated efficiency distribution of UPSs in the absence of new or amended energy conservation standards. In contrast, the PBP for a given efficiency level is measured relative to the baseline product.

For each considered efficiency level in each product class, DOE calculated the LCC and PBP for a nationally representative set of housing units, as well as one for commercial buildings. For each sample household and commercial building, DOE determined the energy consumption for the UPS and the appropriate electricity price. By developing a representative sample of households, the analysis captured the variability in energy consumption and energy prices associated with the use of UPSs.

DOE was unable to locate a survey sample specific to UPS users for either the residential or commercial sector. However, as mentioned in the previous section, manufacturer interviews indicate that most VFD products are used with personal computers, around three quarters of low-end VI products are used with computers and workstations, and around three quarters of higher-end VI and VFI products are used with servers. DOE thus created residential and commercial samples for desktop computers as a proxy for the sample of VFD and VI UPS owners, and a sample for servers as a proxy for the sample of VFI UPS owners.

DOE developed its residential sample from the set of individual responses to the Consumer Electronics Association's (CEA's) *16th Annual CE Ownership and Market Potential Study.*[18] CEA administered the survey to a random, nationally representative sample of more than 2,000 U.S. adults in January and February 2014. The individual-level survey data that CEA provided to DOE were weighted to reflect the known demographics of the sample population; weighting by geographic region, gender, age, and race were used to make the data generalizable to the entire U.S. adult population. From this dataset, DOE constructed its household sample for UPSs by considering the number of desktop computers per household in conjunction with 2013 household income and state of residence.

To create a commercial building sample, DOE relied on EIA's Commercial Buildings Energy Consumption Survey (CBECS), a nationally representative survey with a rich dataset of energy-related characteristics of the nation's stock of commercial buildings.[19] Individual survey responses from the most recent survey in 2012 allowed DOE to consider how the commercial penetration of servers and desktop computers varies by principal building activity and by Census Division. DOE used these microdata to construct the commercial sample of UPSs, which are assumed to back up and condition power for servers and desktop computers.

Inputs to the calculation of total installed cost include the cost of the product—which includes MPCs, manufacturer markups, retailer and distributor markups, and sales taxes—and installation costs. Inputs to the calculation of operating expenses include annual energy consumption, energy prices and price projections, repair and maintenance costs, product lifetimes, and discount rates. DOE created distributions of values for product lifetime, discount rates, and sales taxes, with probabilities attached to each value, to account for their uncertainty and variability.

The computer model DOE uses to calculate the LCC and PBP relies on a Monte Carlo simulation to incorporate uncertainty and variability into the analysis. The Monte Carlo simulations randomly sample input values from the probability distributions and UPS user samples. The model calculated the LCC and PBP for products at each efficiency level for 10,000 housing units and 10,000 commercial buildings per simulation run.

DOE calculated the LCC and PBP for all consumers of UPSs as if each were to purchase a new product in the first year of required compliance with new standards. Any new standards would apply to UPSs manufactured two years after the date on which any new standard is published. Therefore, for purposes of its analysis, DOE used 2019 as the first year of compliance with any new standards for UPSs.

Table IV–2 summarizes the approach and data DOE used to derive inputs to the LCC and PBP calculations. The subsections that follow provide further discussion. Details of the spreadsheet model, and of all the inputs to the LCC and PBP analyses, are contained in chapter 8 of the final rule TSD and its appendices.

TABLE IV–2—SUMMARY OF INPUTS AND METHODS FOR THE LCC AND PBP ANALYSIS *

Inputs	Source/method
Product Cost	Derived by multiplying MPCs by manufacturer and retailer markups and sales tax, as appropriate. Used historical data to derive a price scaling index to project product costs.
Installation Costs	Assumed no change with efficiency level.
Annual Energy Use	Power loss (a function of rated output power) multiplied by annual operating hours. Average number of hours at a typical load based on ENERGY STAR load profile. Variability: Distribution of rated power from online retail websites.
Energy Prices	Electricity: Based on 2014 marginal electricity price data from the Edison Electric Institute. Variability: Electricity prices vary by season, U.S. region, and baseline electricity consumption level.
Energy Price Trends	Based on *AEO2016* price projections.
Repair and Maintenance Costs	Assumed no change with efficiency level.
Product Lifetime	Based on literature review and manufacturer interviews. Variability: Based on a Weibull distribution.
Discount Rates	Approach involves identifying all possible debt or asset classes that might be used to purchase the considered appliances, or might be affected indirectly. Primary data source was the Federal Reserve Board's Survey of Consumer Finances.
Compliance Date	2019.

* References for the data sources mentioned in this table are provided in the sections following the table or in chapter 8 of the final rule TSD.

1. Product Cost

To calculate consumer product costs, DOE multiplied the MPCs developed in the engineering analysis by the markups described above (along with sales taxes). DOE used different markups for baseline products and higher-efficiency products, because DOE applies an incremental markup to the increase in MSP associated with higher-efficiency product. The prices used in the LCC and PBP analysis are MPC in the compliance year, as described in chapter 5 of the TSD.

Examination of historical price trends for a number of appliances that have been subject to energy conservation standards indicates that an assumption of constant real prices and costs may overestimate long-term trends in appliance prices. Economic literature and historical data suggest that the real costs of these products may in fact trend downward over time according to

[18] Available for purchase at *http://store.ce.org/Default.aspx?TabID=251&productId=782583.*

[19] U.S. Department of Energy—U.S. Energy Information Administration. Commercial Buildings Energy Consumption Survey (CBECS). 2012 Public Use Microdata File. 2015. Washington, DC. *http://www.eia.gov/consumption/commercial/data/2012/index.cfm?view=microdata.*

''learning'' or ''experience'' curves. On February 22, 2011, DOE published a notice of data availability (NODA) stating that DOE may consider refining its analysis by addressing equipment price trends. 76 FR 9696. It also raised the possibility that once sufficient long-term data are available on the cost or price trends for a given product subject to energy conservation standards, DOE would consider these data to forecast future trends. However, DOE found no data or manufacturer input to suggest appreciable price trends for UPSs, and thus assumed no price trend for UPSs.

ASAP et al. noted that DOE has included price trends in its analyses for several other products, including mature products, and implied that DOE should incorporate a price trend for UPSs. (ASAP et al., No. 0020 at p. 3) DOE notes that its methodology for determining appropriate price trends for a given product relies on collecting sufficient historical data on shipments and prices to perform the necessary analysis. DOE reiterates that it was unable to find any such data for UPSs. In the absence of data, DOE assumed no price trend for UPSs in the final rule.

2. Installation Cost

Installation cost includes labor, overhead, and any miscellaneous materials and parts needed to install the product. DOE found no evidence that installation costs would be impacted with increased efficiency levels for UPSs. DOE received no comments on installation costs for UPSs.

3. Annual Energy Consumption

For each sampled household and commercial building, DOE determined the energy consumption for a UPS at different efficiency levels using the approach described in section IV.E of this document.

4. Energy Prices

DOE used marginal electricity prices to characterize the incremental savings associated with ELs above the baseline. The marginal electricity prices vary by season, region, and baseline household electricity consumption level for the LCC. DOE estimated these prices using data published with the Edison Electric Institute (EEI) Typical Bills and Average Rates reports for summer and winter 2014.[20] DOE assigned seasonal marginal prices to each household or commercial building in the LCC sample based on its location and its baseline monthly electricity consumption for an average summer or winter month. For a detailed discussion of the development of electricity prices, see appendix 8D of the final rule TSD.

To estimate electricity prices in future years, DOE multiplied the average regional prices by annual energy price factors derived from the forecasts of annual average residential and commercial electricity price changes by region that are consistent with cases described on p. E–8 in *AEO 2016.*[21] *AEO 2016* has an end year of 2040. To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2020 to 2040. DOE received no comments on its estimation of energy prices.

5. Maintenance and Repair Costs

Repair costs are associated with repairing or replacing product components that have failed in an appliance; maintenance costs are associated with maintaining the operation of the product. For UPSs, DOE assumed that small incremental increases in product efficiency produce no, or only minor, changes in repair and maintenance costs compared to baseline efficiency products. DOE received no comments on maintain or repair costs.

6. Product Lifetime

For UPSs, DOE performed a search of the published literature to identify minimum and maximum average lifetimes from a variety of sources. DOE also considered input from manufacturer interviews conducted in early 2015. Table IV–3 summarizes the UPS lifetimes that DOE compiled from the literature and manufacture interviews. Where a range for lifetime was given, DOE noted the minimum and maximum values; where there was only one figure, DOE recorded this figure as both the minimum and maximum value. DOE computed mean lifetime by averaging these values across the product class.

TABLE IV–3—UPS PRODUCT LIFETIMES FROM LITERATURE AND MANUFACTURER INPUT

Product class	Description	Lifetimes (years)			
		Minimum	Mean	Median	Maximum
10a	VFD UPS	3	5	5	7
10b	VI UPS	5	6.3	6	8
10c	VFI UPS	8	10	10	12

Using these minimum, maximum, and mean lifetimes, DOE constructed survival functions for the various UPS product classes. No more than 10 percent of units were assumed to fail before the minimum lifetime, and no more than 90 percent of units were assumed to fail before the maximum lifetime. DOE assumed these survival functions have the form of a cumulative Weibull distribution, a probability distribution commonly used to model appliance lifetimes. Its form is similar to that of an exponential distribution, which models a fixed failure rate, except a Weibull distribution allows for a failure rate that can increase over time as appliances age. DOE received no comments on its estimate of UPS lifetimes. For additional discussion of UPS lifetimes, refer to chapter 8 of the final rule TSD.

7. Discount Rates

In the calculation of LCC, DOE applies discount rates appropriate to households to estimate the present value of future operating costs. DOE estimated a distribution of residential discount rates for UPSs based on

[20] Edison Electric Institute. *Typical Bills and Average Rates Report.* Winter 2014 published April 2014, Summer 2014 published October 2014. *http://www.eei.org/resourcesandmedia/products/Pages/Products.aspx.*

[21] EIA. *Annual Energy Outlook 2016 with Projections to 2040.* Washington, DC. Available at *www.eia.gov/forecasts/aeo/.* The standards finalized in this rulemaking will take effect a few years prior to the 2022 commencement of the Clean Power Plan compliance requirements. As DOE has not modeled the effect of CPP during the 30 year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. These energy efficiency standards are expected to put downward pressure on energy prices relative to the projections in the AEO 2016 case that incorporates the CPP. Consequently, DOE used the electricity price projections found in the AEO 2016 No-CPP case as these electricity price projections are expected to be lower, yielding more conservative estimates for consumer savings due to the energy efficiency standards.

consumer financing costs and the opportunity cost of consumer funds.

DOE applies weighted average discount rates calculated from consumer debt and asset data, rather than marginal or implicit discount rates.[22] DOE notes that the LCC does not analyze the appliance purchase decision, so the implicit discount rate is not relevant in this model. The LCC estimates net present value over the lifetime of the product, so the appropriate discount rate will reflect the general opportunity cost of household funds, taking this time scale into account. Given the long time horizon modeled in the LCC, the application of a marginal interest rate associated with an initial source of funds is inaccurate. Regardless of the method of purchase, consumers are expected to continue to rebalance their debt and asset holdings over the LCC analysis period, based on the restrictions consumers face in their debt payment requirements and the relative size of the interest rates available on debts and assets. DOE estimates the aggregate impact of this rebalancing using the historical distribution of debts and assets.

To establish residential discount rates for the LCC analysis, DOE identified all relevant household debt or asset classes in order to approximate a consumer's opportunity cost of funds related to appliance energy cost savings. It estimated the average percentage shares of the various types of debt and equity by household income group using data from the Federal Reserve Board's Survey of Consumer Finances[23] (SCF) for 1995, 1998, 2001, 2004, 2007, 2010, and 2013. Using the SCF and other sources, DOE developed a distribution of rates for each type of debt and asset by income group to represent the rates that may apply in the year in which amended standards would take effect. DOE assigned each sample household a specific discount rate drawn from one of the distributions. The average rate across all types of household debt and equity and income groups, weighted by the shares of each type, is 4.3 percent. DOE received no comments on its estimate of residential discount rates. See chapter 8 of the final rule TSD for further details on the development of consumer discount rates.

To establish commercial discount rates for the LCC analysis, DOE estimated the cost of capital for companies that purchase a UPS. The weighted average cost of capital is commonly used to estimate the present value of cash flows to be derived from a typical company project or investment. Most companies use both debt and equity capital to fund investments, so their cost of capital is the weighted average of the cost to the firm of equity and debt financing, as estimated from financial data for publicly traded firms in the sectors that purchase UPSs. For this analysis, DOE used Damodaran online[24] as the source of information about company debt and equity financing. The average rate across all types of companies, weighted by the shares of each type, is 5.2 percent. DOE received no comments on its estimate of commercial discount rates. See chapter 8 of the final rule TSD for further details on the development of commercial discount rates.

8. Energy Efficiency Distribution in the No-New-Standards Case

To accurately estimate the share of consumers that would be affected by a potential energy conservation standard at a particular efficiency level, DOE's LCC analysis considered the projected distribution (market shares) of product efficiencies under the no-standards case (*i.e.,* the case without amended or new energy conservation standards). To estimate the efficiency distribution of UPSs for 2019, DOE examined a recent ENERGY STAR qualified product list. Although these model lists are not sales-weighted, DOE assumed they were a reasonable representation of the market.

The estimated market penetration of ENERGY STAR-qualified UPSs was 78 percent in 2013, the most recent year for which data were available.[25] During the public meeting held on September 16, 2016, ICF International confirmed that ENERGY STAR compliant UPSs have an estimated 78 percent market penetration. (ICF International, Pub. Mtg. Tr., No. 0014 at p. 24) DOE assumed market penetration to be 78 percent for all three UPS product classes, as the 2013 Unit Shipment Data report does not distinguish between UPS architectures. In order to assess how qualified products fit into proposed efficiency levels, DOE analyzed a qualified product list downloaded on February 16, 2016, after cross-checking inconsistencies in reported UPS product type with product specifications on retail websites. For the 266 qualified in-scope models, DOE compared average efficiency to the efficiency required for each EL, as determined in the engineering analysis. Finally, DOE assumed that the market share represented by non-ENERGY-STAR-qualified products would belong to the least-efficient efficiency level analyzed. The estimated market shares for the no-new-standards case for UPSs are shown in Table IV–4. DOE received no other comments on the estimated market shares for the no-new-standards case. See chapter 8 of the final rule TSD for further information on the derivation of the efficiency distributions.

TABLE IV–4—ESTIMATED MARKET SHARES (%) IN EACH EFFICIENCY LEVEL FOR NO-NEW-STANDARDS CASE

Product class	Description	Efficiency level			
		EL 0 (baseline)	EL 1	EL 2	EL 3
10a	VFD UPS	31	47	21	1.5
10b	VI UPS	65	29	6.4	0.0
10c	VFI UPS	71	23	5.8	0.0

[22] The implicit discount rate is inferred from a consumer purchase decision between two otherwise identical goods with different first cost and operating cost. It is the interest rate that equates the increment of first cost to the difference in net present value of lifetime operating cost, incorporating the influence of several factors: Transaction costs; risk premiums and response to uncertainty; time preferences; interest rates at which a consumer is able to borrow or lend.

[23] Board of Governors of the Federal Reserve System. *Survey of Consumer Finances.* Various dates. Washington, DC. *http://www.federalreserve.gov/pubs/oss/oss2/scfindex.html.*

[24] Damodaran, A. *Cost of Capital by Sector.* January 2014. (Last accessed September 25, 2014.) New York, NY. *http://people.stern.nyu.edu/adamodar/New_Home_Page/datafile/wacc.htm.*

[25] Environmental Protection Agency—ENERGY STAR Program. *Certification Year 2013 Unit Shipment Data.* 2014. Washington, DC. *https://www.energystar.gov/index.cfm?c=partners.unit_shipment_data.*

These market shares in each efficiency level were estimated based on national data. Regional data are not available. All other factors being the same, it would be anticipated that higher efficiency purchases in certain regions in the no-standards case would correlate positively with higher energy prices. To the extent that this occurs, it would be expected to result in some lowering of the consumer operating cost savings from those calculated in this final rule.

9. Payback Period Analysis

The payback period is the amount of time it takes the consumer to recover the additional installed cost of more-efficient products, compared to baseline products, through energy cost savings. Payback periods are expressed in years. Payback periods that exceed the life of the product mean that the increased total installed cost is not recovered in reduced operating expenses.

The inputs to the PBP calculation for each efficiency level are the change in total installed cost of the product and the change in the first-year annual operating expenditures relative to the baseline. The PBP calculation uses the same inputs as the LCC analysis, except that discount rates are not needed.

As noted above, EPCA, as amended, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii)) For each considered efficiency level, DOE determined the value of the first year's energy savings by calculating the energy savings in accordance with the applicable DOE test procedure, and multiplying those savings by the average energy price projection for the year in which compliance with the new standards would be required.

G. Shipments Analysis

DOE uses projections of annual product shipments to calculate the national impacts of potential amended or new energy conservation standards on energy use, NPV, and future manufacturer cash flows.[26] Because UPSs back up and condition power for electronics, whose technology evolves more rapidly than many other appliances, DOE did not rely on a stock accounting approach common to other appliances. Instead, DOE largely elected to extrapolate forecasted trends from market research data. Data from Frost & Sullivan [27] and ENERGY STAR unit shipments [28] provided the foundation for DOE's shipments analysis for UPSs. DOE calculated shipment values for 30 years, from 2019, the first year of compliance, through 2048, the last year of the analysis period.

1. Shipment Projections in the No-New-Standards Case

DOE relied on data from Frost & Sullivan and ENERGY STAR to develop the shipments in the no-standards case for UPSs.[29] Frost & Sullivan provide global UPS unit shipments from 2009 to 2019 for the relevant output range <1000 W. Because the next output power range for which shipments are provided is 1–5 kilo-watts (kW), and only UPSs with a NEMA 1–15P or 5–15P plug (approximately corresponding to a rated output power <1800 W) are in scope, DOE excluded this power range from the shipments analysis. Doing so results in a more conservative shipment projection. For <1000 W, Frost & Sullivan supply North American revenue as a percent of global revenue for 2009 to 2019, so DOE assumed that the percent of revenue is a reasonable proxy for percent of shipments. Multiplying global shipments by the North American percentage of revenue, and then by 0.9 under the assumption that the United States makes up 90 percent of the North American market, yielded U.S. UPS shipments.

Frost & Sullivan provide no classification by type of UPS within the relevant power range. However, the 2013 ENERGY STAR unit shipment data collection process [30] provides such a breakdown; in that year, market penetration of UPSs was 78 percent,[31] so DOE assumed these data are representative of the market. DOE used these data to determine how <1000 W UPSs are apportioned among different topologies for 2013 to 2019, assuming this allocation stays constant: 50 percent VFD, 39 percent VI, and 12 percent VFI. The Frost & Sullivan data indicate that the commercial sector dominates UPS revenue in the <1000 W market segment; therefore, DOE assumed a split of 90 percent commercial and 10 percent residential shipments.

To project UPS shipments from 2020–2048, DOE extrapolated the linear trends forecasted by Frost & Sullivan from 2014 to 2019. In conjunction with the 2013 fixed split between topologies and a fixed portion of 0.9 for the United States relative to North American shipments, DOE projected the increasing linear trend in global UPS shipments <1 kW and the decreasing linear share of North American revenue to forecast shipments from 2019 to 2048.

NEMA and ITI noted that ENERGY STAR shipment data for UPSs indicate an 18 percent decline in shipments from 2014 and 2015. They also note that shipment projections of desktop computers show a declining market. NEMA and ITI state that DOE's shipments analysis is in error, and relies on historical data which is no longer applicable. (NEMA and ITI, No. 0019 at p. 13) In response to DOE's request for shipment data in the NOPR, Schneider also noted that ENERGY STAR shipment volume estimates have been in decline, but did not provide any shipment data due to confidentiality restrictions. (Schneider Electric, No. 0017 at p. 16)

DOE clarifies that its shipment analysis does not depend on historical data gathered independently, but rather relies on the analysis provided by the market research firm Frost & Sullivan. Frost & Sullivan provide their own market projections out to 2019 (partially based on its own historical data), after which DOE linearly extrapolated the shipment trends. DOE has no reason to suspect the Frost & Sullivan analysis is flawed, and continues to rely on it for the final rule. DOE acknowledges that there may have been short-lived market impacts in the past year or two due to various economic factors, and that the ENERGY STAR shipment data may reflect this dynamic. However, DOE notes that the penetration of ENERGY STAR products in the market may fluctuate, and ENERGY STAR shipment estimates do not provide a complete picture of the market. DOE further emphasizes that its shipment analysis is a long term projection over 30 years starting in 2019.

[26] DOE uses data on manufacturer shipments as a proxy for national sales, as aggregate data on sales are lacking. In general one would expect a close correspondence between shipments and sales.

[27] Cherian, A. *Analysis of the Global Uninterruptible Power Supplies Market: Need for Greater Power Reliability Driving Growth.* Frost & Sullivan. 2013. San Antonio, TX. *http://www.frost.com/c/10077/sublib/display-report.do?id=NC62-01-00-00-00.*

[28] Environmental Protection Agency—ENERGY STAR Program. *Certification Year 2013 UPS Unit Shipment Data.* 2013. Washington, DC. *https://www.energystar.gov/index.cfm?c=partners.unit_shipment_data.*

[29] Cherian, A. *Analysis of the Global Uninterruptible Power Supplies Market: Need for Greater Power Reliability Driving Growth.* Frost & Sullivan. 2013. San Antonio, TX. *http://www.frost.com/c/10077/sublib/display-report.do?id=NC62-01-00-00-00.*

[30] Environmental Protection Agency—ENERGY STAR Program. *Certification Year 2013 UPS Unit Shipment Data.* 2013. Washington, DC. *https://www.energystar.gov/index.cfm?c=partners.unit_shipment_data.*

[31] Ibid.

DOE acknowledges that desktop computer shipments are in decline, but notes that server shipments are not. Furthermore, Schneider acknowledged during the public meeting held on September 16, 2016, that there are growing applications of UPSs other than desktop computers and servers (*e.g.,* voice over internet Protocol, modems, routers, other wired and wireless network devices). (Schneider Electric, Pub. Mtg. Tr., No. 0014 at pp. 83–84; ASAP et al., No. 0020 at p. 2) DOE therefore believes it is reasonable to assume that the UPS market will grow during the time period of its analysis, as supported by Frost & Sullivan's analysis, even if the desktop computer market declines.

DOE acknowledges that there is some uncertainty regarding the future market growth of UPSs, and few analyses exist in the literature over the time period in DOE's analysis. As a result, DOE performed a sensitivity scenario of the national impact analysis assuming lower shipment growth over the 30-year analysis period. This sensitivity scenario is described in appendix 10B of the final rule TSD. While the absolute value of the energy savings estimates vary using this alternate shipments scenario, the relative comparison of the different trial standard levels analyzed does not.

2. Shipments in a Standards Case

Increases in product prices resulting from standards may affect shipment volumes. To DOE's knowledge, price elasticity estimates are not readily available in existing literature for UPSs, and hence DOE assumed a price elasticity of demand of zero.

During the public meeting held on September 16, 2016, Schneider inquired if price elasticity was factored into the analysis. (Schneider Electric, Pub. Mtg. Tr., No. 0014 at pp. 64–65) Schneider believes that DOE's analysis overestimates the market's willingness to absorb costs. (Schneider Electric, No. 0017 at p. 16) EEI similarly inquired as to how prices could increase without having a negative effect on shipments and manufacturer profits. (EEI, Pub. Mtg. Tr., No. 0014 at p. 66) NEMA and ITI disagreed with DOE's underlying assumption that consumers will continue to purchase UPSs of specific topologies regardless of price impacts. They stated that consumers of UPSs are very price-conscious. (NEMA and ITI, No. 0019 at p.6) NEMA and ITI also stated that as mobile computing and cloud computing services have grown relative to desktop computing, consumers can more easily opt to switch to these options instead of purchasing a more expensive UPS. Therefore, the price elasticity for UPSs is non-zero. (NEMA and ITI, No. 0019 at p. 14) No data were provided, however, to support the above statements.

DOE assumes that UPSs are not discretionary electronic devices, and consumers purchase UPSs for power continuity, power reliability, safety, and security needs which cannot be addressed by other products. Consumers with such critical needs are unlikely to forgo or delay the purchase of a UPS. DOE further assumes that in response to a modest price increase in UPSs, consumers are very unlikely to respond by switching from desktop computing to a much more expensive mobile computing platform with similar performance. DOE therefore believes that the UPS market is price inelastic, and continues to assume a price elasticity of demand of zero in its analysis in the absence of any data suggesting otherwise. Furthermore, there are many features available in specific UPS product classes (*e.g.,* power conditioning, precise voltage regulation) that provide important utility. DOE believes it is unlikely that a consumer would substitute or interchange different UPS topologies. Schneider confirmed DOE's understanding during the public meeting held on September 16, 2016, that the different product classes are not substitutes for one another and provide different utility. (Schneider Electric, Pub. Mtg. Tr., No. 0014 at p. 104) DOE therefore continues to assume in its analysis a cross-elasticity of demand of zero, and that there is no product class switching in response to energy conservation standards.

See chapter 9 of the final rule TSD for further details on the development of shipments projections. In response to the above comments regarding the price elasticity of demand, DOE acknowledges that no data exist to inform the analysis for UPSs. As a result, DOE performed a sensitivity scenario of the national impact analysis assuming a non-zero price elasticity of demand in the residential sector. DOE did not perform a sensitivity scenario using a non-zero price elasticity in the commercial sector, as DOE believes business requirements for safety and security result in an inelastic market. A price elasticity developed for household appliances was used in the absence of any literature estimates specific to UPSs. This sensitivity scenario is described in appendix 10B of the final rule TSD. While the absolute value of the energy and operating cost savings estimates vary using this alternate price elasticity scenario, the relative comparison of the different trial standard levels analyzed does not.

H. National Impact Analysis

The NIA assesses the national energy savings (NES) and the national net present value (NPV) from a national perspective of total consumer costs and savings that would be expected to result from new or amended standards at specific efficiency levels.[32] (''Consumer'' in this context refers to consumers of the product being regulated.) DOE calculates the NES and NPV for the potential standard levels considered based on projections of annual product shipments, along with the annual energy consumption and total installed cost data from the energy use and LCC analyses. For the present analysis, DOE projected the energy savings, operating cost savings, product costs, and NPV of consumer benefits over the lifetime of UPSs sold from 2019 through 2048.

DOE evaluates the impacts of new or amended standards by comparing a case without such standards with standards-case projections. The no-new-standards case characterizes energy use and consumer costs for each product class in the absence of new or amended energy conservation standards. For this projection, DOE considers historical trends in efficiency and various forces that are likely to affect the mix of efficiencies over time. DOE compares the no-new-standards case with projections characterizing the market for each product class if DOE adopted new or amended standards at specific energy efficiency levels (*i.e.,* the TSLs or standards cases) for that class. For the standards cases, DOE considers how a given standard would likely affect the market shares of products with efficiencies greater than the standard.

DOE uses a spreadsheet model to calculate the energy savings and the national consumer costs and savings from each TSL. Interested parties can review DOE's analyses by changing various input quantities within the spreadsheet. The NIA spreadsheet model uses typical values (as opposed to probability distributions) as inputs.

Table IV–5 summarizes the inputs and methods DOE used for the NIA analysis for the final rule. Discussion of these inputs and methods follows the

[32] The NIA accounts for impacts in the 50 states and U.S. territories.

table. See chapter 10 of the final rule TSD for further details.

TABLE IV–5—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS

Inputs	Method
Shipments	Annual shipments from shipments model.
Compliance Date of Standard	2019.
Efficiency Trends	No-New-Standards case: no efficiency trend Standard cases: ''roll-up'' scenario.
Annual Energy Consumption per Unit	Annual weighted-average values are a function of energy use at each TSL.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each TSL. Incorporates projection of future product prices based on historical data.
Annual Energy Cost per Unit	Annual weighted-average values as a function of the annual energy consumption per unit and energy prices.
Repair and Maintenance Cost per Unit	Annual values do not change with efficiency level.
Energy Prices	*AEO2016* projections (to 2040) and extrapolation through 2048.
Energy Site-to-Primary and FFC Conversion	A time-series conversion factor based on *AEO2016.*
Discount Rate	Three and seven percent.
Present Year	2016.

1. Product Efficiency Trends

A key component of the NIA is the trend in energy efficiency projected for the no-new-standards case and each of the standards cases. Section IV.F.8 of this rule describes how DOE developed an energy efficiency distribution for the no-new-standards case (which yields a shipment-weighted average efficiency) for each of the considered product classes for the year of anticipated compliance with an amended or new standard. To project the trend in efficiency for UPSs over the entire shipments projection period, DOE examined past improvements in efficiency over time. Little data exist to suggest that UPS efficiencies would improve in the 30 years following 2019 in the no-standards case. The approach is further described in chapter 10 of the final rule TSD.

Schneider submitted a figure showing that UPS efficiency has improved from 1995 to 2016 in the absence of a mandatory energy conservation standard, due to consumer demand and the impact of voluntary programs such as ENERGY STAR. (Schneider Electric, No. 0017 at p. 17) Similarly, NEMA and ITI stated that there is little relevant historic efficiency trend information because the UPS market has already been transformed by the ENERGY STAR UPS program. (NEMA and ITI, No. 0019 at 14) In contrast, CA IOUs agreed with DOE's assessment that UPS efficiencies would not improve in the no-new-standards case, as evidenced by the reported average maintenance-mode power consumptions of UPSs in the California Energy Commission (CEC) appliance database from 2013-to-date. (CA IOUs, No. 0016 at pp. 3–4) DOE notes that the figure submitted by Schneider was for a 1500 VA VFI UPS only, and was not accompanied by the underlying data, nor were any details provided regarding how the data were assembled. It is unclear whether the figure is representative of all UPSs, of all VFI UPSs, of only a subset of VFI UPSs at this rated output power, or of only a single UPS with a specific set of unchanging features. Schneider did not provide data on the efficiency trend for all product classes of UPSs. Given these limitations with the figure submitted by Schneider, and the available data found in the CEC appliance database, there is not sufficient data to suggest UPS efficiency has improved in the absence of an energy conservation standard. DOE continues to assume no efficiency improvement in the no-new-standards case for the final rule.

For the standards cases, DOE used a ''roll-up'' scenario to establish the shipment-weighted efficiency for the year that standards are assumed to become effective (2019). In this scenario, the market shares of products in the no-standards case that do not meet the standard under consideration would ''roll up'' to meet the new standard level, and the market share of products above the standard would remain unchanged. To develop standards case efficiency trends after 2019, DOE implemented the same trend as in the no-standards case: Zero percent for UPSs.

2. National Energy Savings

The national energy savings analysis involves a comparison of national energy consumption of the considered products between each potential standards case (TSL) and the case with no new or amended energy conservation standards. DOE calculated the national energy consumption by multiplying the number of units (stock) of each product (by vintage or age) by the unit energy consumption (also by vintage). DOE calculated annual NES based on the difference in national energy consumption for the no-new-standards case and for each higher efficiency standard case. DOE estimated energy consumption and savings based on site energy and converted the electricity consumption and savings to primary energy (*i.e.,* the energy consumed by power plants to generate site electricity) using annual conversion factors derived from *AEO2016.* Cumulative energy savings are the sum of the NES for each year over the timeframe of the analysis.

In 2011, in response to the recommendations of a committee on ''Point-of-Use and Full-Fuel-Cycle Measurement Approaches to Energy Efficiency Standards'' appointed by the National Academy of Sciences, DOE announced its intention to use full-fuel-cycle (FFC) measures of energy use and greenhouse gas and other emissions in the national impact analyses and emissions analyses included in future energy conservation standards rulemakings. 76 FR 51281 (Aug. 18, 2011). After evaluating the approaches discussed in the August 18, 2011 notice, DOE published a statement of amended policy in which DOE explained its determination that EIA's National Energy Modeling System (NEMS) is the most appropriate tool for its FFC analysis and its intention to use NEMS for that purpose. 77 FR 49701 (Aug. 17, 2012). NEMS is a public domain, multi-sector, partial equilibrium model of the U.S. energy sector [33] that EIA uses to prepare its *Annual Energy Outlook.* The FFC factors incorporate losses in production and delivery in the case of natural gas (including fugitive

[33] For more information on NEMS, refer to *The National Energy Modeling System: An Overview 2009,* DOE/EIA–0581(2009), October 2009. Available at *http://www.eia.gov/forecasts/aeo/index.cfm.*

emissions) and additional energy used to produce and deliver the various fuels used by power plants. The approach used for deriving FFC measures of energy use and emissions is described in appendix 10A of the final rule TSD.

EEI disagreed with DOE's use of *AEO2015* in the analysis for the NOPR, stating that the site-to-primary and FFC conversion factors do not take into account the latest estimates available in *AEO2016.* (EEI, No. 0021 at pp. 5–6) DOE has updated its analysis with *AEO2016* for the final rule.

3. Net Present Value Analysis

The inputs for determining the NPV of the total costs and benefits experienced by consumers are (1) total annual installed cost, (2) total annual operating costs (energy costs and repair and maintenance costs), and (3) a discount factor to calculate the present value of costs and savings. DOE calculates net savings each year as the difference between the no-new-standards case and each standards case in terms of total savings in operating costs versus total increases in installed costs. DOE calculates operating cost savings over the lifetime of each product shipped during the projection period.

The operating cost savings are energy cost savings, which are calculated using the estimated energy savings in each year and the projected price of the appropriate form of energy. To estimate electricity prices in future years, DOE multiplied the average regional prices by annual energy price factors derived from the forecasts of annual average residential and commercial electricity price changes by region that are consistent with cases described on p. E–8 in *AEO 2016.*[34] *AEO 2016* has an end year of 2040. To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2020 through 2040. As part of the NIA, DOE also analyzed scenarios that used inputs from variants of the *AEO2016* that have lower and higher economic growth and lower and higher energy price trends. NIA results based on these cases are presented in appendix 10B of the final rule TSD.

In calculating the NPV, DOE multiplies the net savings in future years by a discount factor to determine their present value. For this final rule, DOE estimated the NPV of consumer benefits using both a 3-percent and a 7-percent real discount rate. DOE uses these discount rates in accordance with guidance provided by the Office of Management and Budget (OMB) to Federal agencies on the development of regulatory analysis.[35] The discount rates for the determination of NPV are in contrast to the discount rates used in the LCC analysis, which are designed to reflect a consumer's perspective. The 7-percent real value is an estimate of the average before-tax rate of return to private capital in the U.S. economy. The 3-percent real value represents the ''social rate of time preference,'' which is the rate at which society discounts future consumption flows to their present value.

I. Consumer Subgroup Analysis

In analyzing the potential impact of new or amended energy conservation standards on consumers, DOE evaluates the impact on identifiable subgroups of consumers that may be disproportionately affected by a new or amended national standard. The purpose of a subgroup analysis is to determine the extent of any such disproportional impacts. DOE evaluates impacts on particular subgroups of consumers by analyzing the LCC impacts and PBP for those particular consumers from alternative standard levels. For this final rule, DOE analyzed the impacts of the considered standard levels on two subgroups: (1) Low-income households and (2) small businesses. DOE used the LCC and PBP spreadsheet model to estimate the impacts of the considered efficiency levels on these subgroups. Chapter 11 in the final rule TSD describes the consumer subgroup analysis.

J. Manufacturer Impact Analysis

1. Overview

DOE conducted an MIA for UPSs to estimate the financial impacts of new energy conservation standards on manufacturers of UPSs. The MIA has both quantitative and qualitative aspects. The quantitative part of the MIA primarily relies on the GRIM, an industry cash flow model with inputs specific to this rulemaking. The key GRIM inputs are data on the industry cost structure, manufacturer production costs (MPCs), and shipments; as well as assumptions about manufacturer markups and manufacturer conversion costs. The key MIA output is INPV. The GRIM calculates annual cash flows using standard accounting principles. DOE used the GRIM to compare changes in INPV between the no-standards case and various TSLs (the standards cases). The difference in INPV between the no-standards case and the standards cases represents the financial impact of new energy conservation standards on UPS manufacturers. Different sets of assumptions (markup scenarios) produce different INPV results. The qualitative part of the MIA addresses factors such as manufacturing capacity; characteristics of, and impacts on, any particular subgroup of manufacturers; the cumulative regulatory burden placed on UPS manufacturers; and any impacts on competition.

2. GRIM Analysis and Key Inputs

DOE uses the GRIM to quantify the changes in cash flows over time due to new energy conservation standards. These changes in cash flows result in either a higher or lower INPV for the standards cases compared to the no-standards case. The GRIM analysis uses a standard annual cash flow analysis that incorporates manufacturer costs, manufacturer markups, shipments, and industry financial information as inputs. It then models changes in costs, investments, and manufacturer margins that result from new energy conservation standards. The GRIM uses these inputs to calculate a series of annual cash flows beginning with the reference year of the analysis, 2016, and continuing through the terminal year of the analysis, 2048. DOE computes INPV by summing the stream of annual discounted cash flows during the analysis period. DOE used a real discount rate of 6.1 percent, the same discount rate used in the August 2016 NOPR, for UPS manufacturers in this final rule. NEMA and Schneider commented that the discount rate was inappropriate for this analysis (NEMA and ITI, No. 0019, at p. 14) (Schneider Electric, No. 0017 at p. 18). DOE used publicly available information from the SEC 10-Ks of publicly traded UPS manufacturers to estimate a discount rate that was reflective of the capital structure of the UPS industry. DOE then asked for feedback on its estimated discount rate of 8.2 percent during manufacturer interviews. Based on

[34] EIA. *Annual Energy Outlook 2016 with Projections to 2040.* Washington, DC. Available at *www.eia.gov/forecasts/aeo/.* The standards finalized in this rulemaking will take effect a few years prior to the 2022 commencement of the Clean Power Plan compliance requirements. As DOE has not modeled the effect of CPP during the 30 year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. These energy efficiency standards are expected to put downward pressure on energy prices relative to the projections in the AEO 2016 case that incorporates the CPP. Consequently, DOE used the electricity price projections found in the AEO 2016 No-CPP case as these electricity price projections are expected to be lower, yielding more conservative estimates for consumer savings due to the energy efficiency standards.

[35] United States Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. Section E. Available at *www.whitehouse.gov/omb/memoranda/m03-21.html.*

manufacturer feedback, DOE adjusted the discount rate to be 6.1 percent for use in the UPS August 2016 NOPR and final rule GRIMs. Many of the GRIM inputs came from the engineering analysis, shipment analysis, manufacturer interviews, and other research conducted during the MIA. The major GRIM inputs are described in detail in the following sections.

a. Capital and Product Conversion Costs

DOE expects new energy conservation standards for UPSs to cause manufacturers to incur conversion costs to bring their production facilities and product designs into compliance with new standards. For the MIA, DOE classified these conversion costs into two major groups: (1) Capital conversion costs and (2) product conversion costs. Capital conversion costs are investments in property, plant, and equipment necessary to adapt or change existing production facilities such that new product designs can be fabricated and assembled. Product conversion costs are investments in research, development, testing, marketing, certification, and other non-capitalized costs necessary to make product designs comply with new standards.

In the August 2016 NOPR, DOE estimated product conversion costs for manufacturers that would have to redesign their UPSs to meet standards. DOE did not estimate capital conversion costs in the August 2016 NOPR. After reviewing comments in response to the August 2016 NOPR, DOE included capital conversion costs and increased product conversion costs for the final rule, based on these comment responses. The revised conversion costs used in the final rule are significantly higher at each of the TSLs than the conversion costs presented in the August 2016 NOPR. The conversion costs used in this final rule are presented in section V.B.2.a.

During the NOPR public meeting, NEMA questioned how the shipments analysis impacted the product conversion costs estimated and commented that only the products that already meet adopted standards would not require redesign (NEMA and ITI, No. 0019 at p. 15) (NEMA, Pub. Mtg. Tr., No. 0014 at p. 62). DOE agrees that UPSs that do not meet adopted standards would require redesign. DOE uses the efficiency distributions for each product class from the shipments analysis to determine how many UPS models in each product class would not meet the required ELs. For the final rule, DOE updated the efficiency distributions used in the shipments analysis. DOE used this updated efficiency distribution in the final rule MIA. More information on the updated shipments analysis can be found in section IV.G if this final rule and in chapter 9 of the final rule TSD.

NEMA and Schneider also commented that compliance with adopted standards would require investments in testing equipment and tooling to print new circuit boards for redesigned UPSs. (NEMA and ITI, No. 0019 at p. 15) (Schneider Electric, No. 0017 at p. 19) In the final rule, DOE accounted for these additional investments for tooling in the capital conversion cost estimates included in the final rule, based on these comment responses. DOE did not include the cost of testing equipment in the capital conversion costs. DOE recognizes that manufacturers will incur additional testing costs in complying with adopted standards. However, DOE included these additional testing costs as part of the product conversion costs, since DOE believes that most UPS manufacturers will outsource testing to third parties. To estimate industry-wide testing costs, DOE used quotes from third party laboratories to calculate the cost of testing two units for all of the models in the UPS industry. DOE notes that the UPS final rule test procedure does not require manufacturers to test two units per platform and stipulates that manufacturers may choose to test either one or two units per model. DOE used the cost of testing two units per platform to reflect DOE's uncertainty of which testing option a manufacturer may choose. Please see the December 12, 2016 UPS test procedure final rulemaking for more information. 81 FR 89806.

Schneider commented that testing equipment would become stranded because the increase in price of UPS caused by the adopted standards would reduce the demand for UPSs (Schneider Electric, No. 0017 at p. 20). DOE did not estimate stranded assets for testing equipment. The shipments analysis shows that UPS shipment volume increases throughout the analysis period, indicating that there would not be reduced demand for UPSs following adopted standards. Based on the shipments analysis, DOE does not believe that testing equipment would become stranded at any of the analyzed ELs. For more information on the shipments analysis, please see section IV.G of this final rule and chapter 9 of the final rule TSD.

Schneider further commented on the duration of UPS product design cycles and asserted that these cycles are typically longer than the two year compliance period for adopted UPS standards (Schneider Electric, No. 0017 at p. 2, 19) (Schneider Electric, Pub. Mtg. Tr., No. 0014 at p. 75–76). In the final rule, DOE accounted for the increased level of investment required to redesign UPS models outside of the regular product design cycles by significantly increasing the product redesign cost estimates included in the product conversion costs of the August 2016 NOPR.

ASAP and the CA IOUs commented that the product conversion costs estimated in the August 2016 NOPR were over-estimated, given that the majority of manufacturers would choose to increase their production capacity for transformer-less UPSs instead of redesigning covered UPSs that do not meet adopted standards (ASAP *et al.,* No. 0020 at p. 2) (CA IOUs, No. 0016 at p. 1–2). DOE estimates conversion costs specific to bringing covered products into compliance with adopted standards. DOE does not factor any potential manufacturer decisions regarding products that are outside of the scope of the rulemaking in its calculation of conversion costs. Conversely, Schneider commented that the required efficiency levels incentivize manufacturers to produce UPSs that are either less than 300W or greater than 1000W instead of redesigning failing UPSs within the wattage range of current product offerings. Schneider stated that DOE did not account for investments manufacturers would need to make to bring these products into compliance with adopted standards (Schneider Electric, No. 007 at p. 5, 8). DOE estimates conversion costs specific to bringing current product offerings into compliance without increasing or decreasing their current wattage. DOE does not model a situation where manufacturers adjust UPS wattages as a result of adopted energy conservation standards in either the shipment analysis or the conversion costs estimates in the MIA.

See chapter 12 of the final rule TSD for a complete description of DOE's assumptions for capital and product conversion costs.

b. Manufacturer Production Costs

Manufacturing more efficient UPSs is more expensive than manufacturing baseline products due to the need for more costly materials and components. The higher MPCs for these more efficient products can affect the revenue and gross margin, and cash flow for the industry, making these product costs key inputs for the GRIM and the MIA. In the MIA, DOE used the MPCs calculated in the engineering analysis,

as described in section IV.C and further detailed in chapter 5 of the final rule TSD. DOE used the same MPCs in this final rule that were used in the August 2016 NOPR.

c. Shipment Scenarios

INPV, the key GRIM output, depends on industry revenue, which depends on the quantity and prices of UPSs shipped in each year of the analysis period. Industry revenue calculations require forecasts of: (1) Total annual shipment volume of UPSs; (2) the distribution of shipments across product classes (because prices vary by product class); and, (3) the distribution of shipments across ELs (because prices vary by efficiency).

In the no-standards case shipment analysis, shipments of UPSs were based on market forecast data from Frost and Sullivan and ENERGY STAR. Since UPS technology evolves more rapidly than other appliance technologies, DOE extrapolated forecasted trends from market research data instead of relying on a stock accounting approach.

DOE modeled a roll-up shipment scenario to estimate shipments of UPSs. In the roll-up shipment scenario, consumers who would have purchased UPSs that fail to meet the new standards in the no-standards case, purchase UPSs that just meet the new standards, but are not more efficient than those standards, in the standards cases. Those consumers that would have purchased compliant UPSs in the no-standards case continue to purchase the exact same UPSs in the standards cases. DOE updated the shipments analysis for the final rule based on comments and data provided in response to the shipment analysis presented in the August 2016 NOPR. The MIA used these updated shipments in the final rule.

For a complete description of the updated shipments see the shipments analysis discussion in section IV.G of this final rule and in chapter 9 of the final rule TSD.

d. Markup Scenarios

As discussed in section IV.J.2.b, the MPCs for UPSs are the manufacturers' costs for those products. These costs include materials, direct labor, depreciation, and overhead, which are collectively referred to as the cost of goods sold (COGS). The MSP is the price received by UPS manufacturers from their customers, typically a distributor but could be the direct users, regardless of the downstream distribution channel through which the UPSs are ultimately sold. The MSP is not the cost the end-user pays for the UPS since there are typically multiple sales along the distribution chain and various markups applied to each sale. The MSP equals the MPC multiplied by the manufacturer markup. The manufacturer markup covers all the UPS manufacturer's non-production costs (*i.e.,* SG&A, R&D, and interest) as well as profit. Total industry revenue for UPS manufacturers equals the MSPs at each EL multiplied by the number of shipments at that EL for each product class.

Modifying these manufacturer markups in the standards cases yields a different set of impacts on UPS manufacturers than in the no-standards case. For the MIA, DOE modeled two standards case markup scenarios to represent the uncertainty regarding the potential impacts on prices and profitability for UPS manufacturers following the implementation of new energy conservation standards. The two markup scenarios are; (1) a preservation of gross margin, or flat, markup scenario and (2) a pass through markup scenario. Each scenario leads to different manufacturer markup values, which, when applied to the inputted MPCs, result in varying revenue and cash flow impacts on UPS manufacturers.

DOE modeled two markup scenarios to represent the upper and lower bounds of prices and profitability following adopted standards. The preservation of gross margin markup scenario represents the best case scenario for manufacturers. DOE recognizes that manufacturers do not expect to be able to mark up the additional cost of production in the standards cases, given the competitive UPS market, and modeled the pass through markup scenario to represent a lower bound on profitability. DOE used the same markup scenarios in the final rule MIA that were used in the in August 2016 NOPR.

3. Manufacturer Interviews

DOE conducted interviews with manufacturers following the publication of the July 2014 framework document in preparation for the NOPR analysis. Schneider inquired if DOE had conducted additional interviews specific to UPSs after the manufacturer interviews that took place in preparation for the March 27, 2012 battery charger NOPR (Schneider Electric, Pub. Mtg. Tr., No. 0014 at p. 54). DOE did conduct manufacturer interviews with UPS manufacturers in 2016 in preparation for the August 2016 NOPR. DOE did not conduct any further interviews with manufacturers between the August 2016 NOPR and the final rule, because further interviews were not necessary to alter the MIA for the final rule. Instead DOE, relied on comments from interested parties to update the MIA for the final rule.

During these interviews, DOE asked manufacturers to describe their major concerns with this UPS rulemaking. UPS manufacturers identified one key issue during these interviews, the burden of testing and certification.

UPS manufacturers stated that the costs associated with testing and certifying all of their products covered by this rulemaking could be burdensome. UPS manufacturers commented that since efficient products do not typically earn a premium in the UPS market, manufacturers do not regularly conduct efficiency testing or pursue energy-efficient certifications for the majority of their product offerings. As a result, the testing and certification required for compliance with a potential standard represents additional costs to the typical product testing conducted by UPS manufacturers. Since adopted standards would require all UPS offerings to be tested and certified, UPS manufacturers explained that this process could become expensive. DOE included the testing and certification costs as part of the product conversion costs included in section IV.J.2.a of this final rule.

In response to the August 2016 NOPR, NEMA and Schneider commented that the test procedure could require multiple days to complete, which could become costly. NEMA and Schneider further stated that the increased testing time could place a constraint on production capacity (NEMA, Pub. Mtg. Tr., No. 0014 at p. 60) (Schneider Electric, No. 0017 at p. 19, 21). DOE did not test any models covered by the scope of the adopted standards that required multiple days to test. DOE does not find that the time needed to complete the test procedure would limit manufacturers' ability to meet demand for compliant UPSs.

K. Emissions Analysis

The emissions analysis consists of two components. The first component estimates the effect of potential energy conservation standards on power sector and site (where applicable) combustion emissions of CO_2, NO_X, SO_2, and Hg. The second component estimates the impacts of potential standards on emissions of two additional greenhouse gases, CH_4 and N_2O, as well as the reductions to emissions of all species due to ''upstream'' activities in the fuel production chain. These upstream activities comprise extraction, processing, and transporting fuels to the site of combustion. The associated

emissions are referred to as upstream emissions.

The analysis of power sector emissions uses marginal emissions factors that were derived from data in *AEO2016,* as described in section IV.M Details of the methodology are described in the appendices to chapters 13 and 15 of the final rule TSD.

Combustion emissions of CH_4 and N_2O are estimated using emissions intensity factors published by the EPA—GHG Emissions Factors Hub.[36] The FFC upstream emissions are estimated based on the methodology described in chapter 15 of the final rule TSD. The upstream emissions include both emissions from fuel combustion during extraction, processing, and transportation of fuel, and ''fugitive'' emissions (direct leakage to the atmosphere) of CH_4 and CO_2.

The emissions intensity factors are expressed in terms of physical units per MWh or MMBtu of site energy savings. Total emissions reductions are estimated using the energy savings calculated in the national impact analysis.

The *AEO* incorporates the projected impacts of existing air quality regulations on emissions. *AEO2016* generally represents current legislation and environmental regulations, including recent government actions, for which implementing regulations were available as of the end of February 2016. DOE's estimation of impacts accounts for the presence of the emissions control programs discussed in the following paragraphs.

SO_2 emissions from affected electric generating units (EGUs) are subject to nationwide and regional emissions cap-and-trade programs. Title IV of the Clean Air Act sets an annual emissions cap on SO_2 for affected EGUs in the 48 contiguous States and the District of Columbia (DC). (42 U.S.C. 7651 *et seq.*) SO_2 emissions from 28 eastern States and DC were also limited under the Clean Air Interstate Rule (CAIR). 70 FR 25162 (May 12, 2005). CAIR created an allowance-based trading program that operates along with the Title IV program. In 2008, CAIR was remanded to EPA by the U.S. Court of Appeals for the District of Columbia Circuit, but it remained in effect.[37] In 2011, EPA issued a replacement for CAIR, the Cross-State Air Pollution Rule (CSAPR). 76 FR 48208 (Aug. 8, 2011). On August 21, 2012, the D.C. Circuit issued a decision to vacate CSAPR,[38] and the court ordered EPA to continue administering CAIR. On April 29, 2014, the U.S. Supreme Court reversed the judgment of the D.C. Circuit and remanded the case for further proceedings consistent with the Supreme Court's opinion.[39] On October 23, 2014, the D.C. Circuit lifted the stay of CSAPR.[40] Pursuant to this action, CSAPR went into effect (and CAIR ceased to be in effect) as of January 1, 2015.[41] *AEO2016* incorporates implementation of CSAPR.

The attainment of emissions caps is typically flexible among EGUs and is enforced through the use of emissions allowances and tradable permits. Under existing EPA regulations, any excess SO_2 emissions allowances resulting from the lower electricity demand caused by the adoption of an efficiency standard could be used to permit offsetting increases in SO_2 emissions by any regulated EGU. In past years, DOE recognized that there was uncertainty about the effects of efficiency standards on SO_2 emissions covered by the existing cap-and-trade system, but it concluded that negligible reductions in power sector SO_2 emissions would occur as a result of standards.

Beginning in 2016, however, SO_2 emissions will fall as a result of the Mercury and Air Toxics Standards (MATS) for power plants. 77 FR 9304 (Feb. 16, 2012). In the MATS final rule, EPA established a standard for hydrogen chloride as a surrogate for acid gas hazardous air pollutants (HAP), and also established a standard for SO_2 (a non-HAP acid gas) as an alternative equivalent surrogate standard for acid gas HAP. The same controls are used to reduce HAP and non-HAP acid gas; thus, SO_2 emissions will be reduced as a result of the control technologies installed on coal-fired power plants to comply with the MATS requirements for acid gas. *AEO2016* assumes that, in order to continue operating, coal plants must have either flue gas desulfurization or dry sorbent injection systems installed by 2016. Both technologies, which are used to reduce acid gas emissions, also reduce SO_2 emissions. Under the MATS, emissions will be far below the cap established by CSAPR, so it is unlikely that excess SO_2 emissions allowances resulting from the lower electricity demand would be needed or used to permit offsetting increases in SO_2 emissions by any regulated EGU.[42] Therefore, DOE believes that energy conservation standards that decrease electricity generation will generally reduce SO_2 emissions in 2016 and beyond.

CSAPR established a cap on NO_X emissions in 28 eastern States and the District of Columbia. Energy conservation standards are expected to have little effect on NO_X emissions in those States covered by CSAPR because excess NO_X emissions allowances resulting from the lower electricity demand could be used to permit offsetting increases in NO_X emissions from other facilities. However, standards would be expected to reduce NO_X emissions in the States not affected by the caps, so DOE estimated NO_X emissions reductions from the standards considered in this final rule for these States.

The MATS limit mercury emissions from power plants, but they do not include emissions caps and, as such, DOE's energy conservation standards would likely reduce Hg emissions. DOE estimated mercury emissions reduction using emissions factors based on *AEO2016,* which incorporates the MATS.

[36] Available at *www2.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub.*

[37] See *North Carolina* v. *EPA,* 531 F.3d 896 (D.C. Cir. 2008), modified on rehearing, 550 F.3d 1176 (D.C. Cir. 2008).

[38] See *EME Homer City Generation, L.P.* v. *EPA,* 696 F.3d 7 (D.C. Cir. 2012).

[39] See *EPA* v. *EME Homer City Generation, L.P.* 134 S. Ct. 1584 (U.S. 2014). The Supreme Court held in part that EPA's methodology for quantifying emissions that must be eliminated in certain States due to their impacts in other downwind States was based on a permissible, workable, and equitable interpretation of the Clean Air Act provision that provides statutory authority for CSAPR.

[40] See *EME Homer City Generation, L.P.* v. *EPA,* Order (D.C. Cir. filed October 23, 2014) (No. 11–1302).

[41] On July 28, 2015, the D.C. Circuit issued its opinion regarding the remaining issues raised with respect to CSAPR that were remanded by the Supreme Court. The D.C. Circuit largely upheld CSAPR but remanded to EPA without *vacating* certain States' emission budgets for reconsideration. *EME Homer City Generation, LP* v. *EPA,* 795 F.3d 118 (D.C. Cir. 2015).

[42] DOE notes that on June 29, 2015, the U.S. Supreme Court ruled that the EPA erred when the agency concluded that cost did not need to be considered in the finding that regulation of hazardous air pollutants from coal- and oil-fired electric utility steam generating units (EGUs) is appropriate and necessary under section 112 of the Clean Air Act (CAA). *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015). The Supreme Court did not vacate the MATS rule, and DOE has tentatively determined that the Court's decision on the MATS rule does not change the assumptions regarding the impact of energy conservation standards on SO_2 emissions. Further, the Court's decision does not change the impact of the energy conservation standards on mercury emissions. The EPA, in response to the U.S. Supreme Court's direction, has now considered cost in evaluating whether it is appropriate and necessary to regulate coal- and oil-fired EGUs under the CAA. EPA concluded in its final supplemental finding that a consideration of cost does not alter the EPA's previous determination that regulation of hazardous air pollutants, including mercury, from coal- and oil-fired EGUs, is appropriate and necessary. 81 FR 24420 (April 25, 2016). The MATS rule remains in effect, but litigation is pending in the D.C. Circuit Court of Appeals over EPA's final supplemental finding MATS rule.

The *AEO 2016* Reference case (and some other cases) assumes implementation of the Clean Power Plan (CPP), which is the EPA program to regulate CO_2 emissions at existing fossil-fired electric power plants.[43] For the current analysis, impacts are quantified by comparing the levels of electricity sector generation, installed capacity, fuel consumption and emissions consistent with the projections described on page E–8 of *AEO 2016* and various side cases.[44]

L. Monetizing Carbon Dioxide and Other Emissions Impacts

As part of the development of this rule, DOE considered the estimated monetary benefits from the reduced emissions of CO_2 and NO_X that are expected to result from each of the TSLs considered. In order to make this calculation analogous to the calculation of the NPV of consumer benefit, DOE considered the reduced emissions expected to result over the lifetime of products shipped in the projection period for each TSL. This section summarizes the basis for the monetary values used for CO_2 and NO_X emissions and presents the values considered in this final rule.

For this final rule, DOE relied on a set of values for the social cost of CO_2 (SC-CO_2) that was developed by a Federal interagency process. The basis for these values is summarized in the next section, and a more detailed description of the methodologies used is provided as an appendix to chapter 14 of the final rule TSD.

1. Social Cost of Carbon

The SC-CO_2 is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) climate-change-related changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services. Estimates of the SC-CO_2 are provided in dollars per metric ton of CO_2. A domestic SC-CO_2 value is meant to reflect the value of damages in the United States resulting from a unit change in CO_2 emissions, while a global SC-CO_2 value is meant to reflect the value of damages worldwide.

Under section 1(b)(6) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), agencies must, to the extent permitted by law, ''assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.'' The purpose of the SC-CO_2 estimates presented here is to allow agencies to incorporate the monetized social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

As part of the interagency process that developed these SC-CO_2 estimates, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. The main objective of this process was to develop a range of SC-CO_2 values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SC-CO_2 estimates used in the rulemaking process.

a. Monetizing Carbon Dioxide Emissions

When attempting to assess the incremental economic impacts of CO_2 emissions, the analyst faces a number of challenges. A report from the National Research Council[45] points out that any assessment will suffer from uncertainty, speculation, and lack of information about (1) future emissions of GHGs, (2) the effects of past and future emissions on the climate system, (3) the impact of changes in climate on the physical and biological environment, and (4) the translation of these environmental impacts into economic damages. As a result, any effort to quantify and monetize the harms associated with climate change will raise questions of science, economics, and ethics and should be viewed as provisional.

Despite the limits of both quantification and monetization, SC-CO_2 estimates can be useful in estimating the social benefits of reducing CO_2 emissions. Although any numerical estimate of the benefits of reducing CO_2 emissions is subject to some uncertainty, that does not relieve DOE of its obligation to attempt to factor those benefits into its cost-benefit analysis. Moreover, the interagency working group (IWG) SC-CO_2 estimates are well supported by the existing scientific and economic literature. As a result, DOE has relied on these estimates in quantifying the social benefits of reducing CO_2 emissions. DOE estimates the benefits from reduced emissions in any future year by multiplying the change in emissions in that year by the SC-CO_2 values appropriate for that year. The NPV of the benefits can then be calculated by multiplying each of these future benefits by an appropriate discount factor and summing across all affected years.

It is important to emphasize that the current SC-CO_2 values reflect the IWG's best assessment, based on current data, of the societal effect of CO_2 emissions. The IWG is committed to updating these estimates as the science and economic understanding of climate change and its impacts on society improves over time. In the meantime, the interagency group will continue to explore the issues raised by this analysis and consider public comments as part of the ongoing interagency process.

In 2009, an interagency process was initiated to offer a preliminary assessment of how best to quantify the benefits from reducing carbon dioxide emissions. To ensure consistency in how benefits are evaluated across Federal agencies, the Administration sought to develop a transparent and defensible method, specifically designed for the rulemaking process, to quantify avoided climate change damages from reduced CO_2 emissions. The interagency group did not undertake any original analysis. Instead, it combined SC-CO_2 estimates from the existing literature to use as interim values until a more comprehensive analysis could be conducted. The outcome of the preliminary assessment by the interagency group was a set of five interim values that represented the first sustained interagency effort within the U.S. government to develop an SC-CO_2 estimate for use in regulatory analysis. The results of this preliminary effort were presented in several

[43] U.S. EPA, ''Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units'' (80 FR 64662, October 23, 2015). *https://www.federalregister.gov/articles/2015/10/23/2015-22842/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.*

[44] As DOE has not modeled the effect of CPP during the 30 year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. With respect to estimated CO_2 and NO_X emissions reductions and their associated monetized benefits, if implemented the CPP would result in an overall decrease in CO_2 emissions from electric generating units (EGUs), and would thus likely reduce some of the estimated CO_2 reductions associated with this rulemaking.

[45] National Research Council. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use.* 2009. National Academies Press: Washington, DC.

proposed and final rules issued by DOE and other agencies.

b. Current Approach and Key Assumptions

After the release of the interim values, the IWG reconvened on a regular basis to generate improved SC-CO_2 estimates. Specially, the group considered public comments and further explored the technical literature in relevant fields. The interagency group relied on three integrated assessment models commonly used to estimate the SC-CO_2: the FUND, DICE, and PAGE models. These models are frequently cited in the peer-reviewed literature and were used in the last assessment of the Intergovernmental Panel on Climate Change (IPCC). Each model was given equal weight in the SC-CO_2 values that were developed.

Each model takes a slightly different approach to model how changes in emissions result in changes in economic damages. A key objective of the interagency process was to enable a consistent exploration of the three models, while respecting the different approaches to quantifying damages taken by the key modelers in the field. An extensive review of the literature was conducted to select three sets of input parameters for these models: Climate sensitivity, socio-economic and emissions trajectories, and discount rates. A probability distribution for climate sensitivity was specified as an input into all three models. In addition, the interagency group used a range of scenarios for the socio-economic parameters and a range of values for the discount rate. All other model features were left unchanged, relying on the model developers' best estimates and judgments.

In 2010, the IWG selected four sets of SC-CO_2 values for use in regulatory analyses. Three sets of values are based on the average SC-CO_2 from the three integrated assessment models, at discount rates of 2.5, 3, and 5 percent. The fourth set, which represents the 95th percentile SC-CO_2 estimate across all three models at a 3-percent discount rate, was included to represent higher-than-expected impacts from climate change further out in the tails of the SC-CO_2 distribution. The values grow in real terms over time. Additionally, the IWG determined that a range of values from 7 percent to 23 percent should be used to adjust the global SC-CO_2 to calculate domestic effects,[46] although preference is given to consideration of the global benefits of reducing CO_2 emissions. Table IV–6 presents the values in the 2010 interagency group report.[47]

TABLE IV–6—ANNUAL SC-CO_2 VALUES FROM 2010 INTERAGENCY REPORT

[2007$ per metric ton CO_2]

Year	Discount rate			
	5%	3%	2.5%	3%
	Average	Average	Average	95th Percentile
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

In 2013 the IWG released an update (which was revised in July 2015) that contained SC-CO_2 values that were generated using the most recent versions of the three integrated assessment models that have been published in the peer-reviewed literature.[48] DOE used these values for this final rule. Table IV–7 shows the updated sets of SC-CO_2 estimates from the 2013 interagency update (revised July 2015) in 5-year increments from 2010 through 2050. The full set of annual SC-CO_2 estimates from 2010 through 2050 is reported in appendix 14A of the final rule TSD. The central value that emerges is the average SC-CO_2 across models at the 3-percent discount rate. However, for purposes of capturing the uncertainties involved in regulatory impact analysis, the IWG emphasizes the importance of including all four sets of SC-CO_2 values.

TABLE IV–7—ANNUAL SC-CO_2 VALUES FROM 2013 INTERAGENCY UPDATE (REVISED JULY 2015)

[2007$ per metric ton CO_2]

Year	Discount Rate			
	5%	3%	2.5%	3%
	Average	Average	Average	95th Percentile
2010	10	31	50	86

[46] It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no *a priori* reason why domestic benefits should be a constant fraction of net global damages over time.

[47] United States Government–Interagency Working Group on Social Cost of Carbon. *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* February 2010. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf.*

[48] United States Government–Interagency Working Group on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* May 2013. Revised July 2015. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

TABLE IV–7—ANNUAL SC-CO_2 VALUES FROM 2013 INTERAGENCY UPDATE (REVISED JULY 2015)—Continued

[2007$ per metric ton CO_2]

Year	Discount Rate			
	5%	3%	2.5%	3%
	Average	Average	Average	95th Percentile
2015	11	36	56	105
2020	12	42	62	123
2025	14	46	68	138
2030	16	50	73	152
2035	18	55	78	168
2040	21	60	84	183
2045	23	64	89	197
2050	26	69	95	212

It is important to recognize that a number of key uncertainties remain, and that current SC-CO_2 estimates should be treated as provisional and revisable because they will evolve with improved scientific and economic understanding. The interagency group also recognizes that the existing models are imperfect and incomplete. The National Research Council report mentioned previously points out that there is tension between the goal of producing quantified estimates of the economic damages from an incremental ton of carbon and the limits of existing efforts to model these effects. There are a number of analytical challenges that are being addressed by the research community, including research programs housed in many of the Federal agencies participating in the IWG process. The interagency group intends to periodically review and reconsider those estimates to reflect increasing knowledge of the science and economics of climate impacts, as well as improvements in modeling.[49]

DOE converted the values from the 2013 interagency report (revised July 2015) to 2015$ using the implicit price deflator for gross domestic product (GDP) from the Bureau of Economic Analysis. For each of the four sets of SC-CO_2 cases, the values for emissions in 2020 were $13.5, $47.4, $69.9, and $139 per metric ton avoided (values expressed in 2015$)]. DOE derived values after 2050 based on the trend in 2010–2050 in each of the four cases in the interagency update.

DOE multiplied the CO_2 emissions reduction estimated for each year by the SC-CO_2 value for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SC-CO_2 values in each case.

The U.S. Chamber of Commerce (USCC) and the Industrial Energy Consumers of America commented on the development of and the use of the SC-CO_2 values in DOE's analyses. A group of trade associations led by the USCC objected to DOE's continued use of the SC-CO_2 in the cost-benefit analysis and stated that the SC-CO_2 calculation should not be used in any rulemaking until it undergoes a more rigorous notice, review, and comment process. (U.S. Chamber of Commerce, No. 0078 at p. 41) IECA stated that before DOE applies any SC-CO_2 estimate in its rulemaking, DOE must correct the methodological flaws that commenters have raised about the IWG's SC-CO_2 estimate. IECA referenced a U.S. Government Accountability Office (GAO) report that highlights severe uncertainties in SC-CO_2 values. (IECA, No. 0015 at p. 2)

In conducting the interagency process that developed the SC-CO_2 values, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. Key uncertainties and model differences transparently and consistently inform the range of SC-CO_2 estimates. These uncertainties and model differences are discussed in the IWG's reports, as are the major assumptions. Specifically, uncertainties in the assumptions regarding climate sensitivity, as well as other model inputs such as economic growth and emissions trajectories, are discussed and the reasons for the specific input assumptions chosen are explained. However, the three integrated assessment models used to estimate the SC-CO_2 are frequently cited in the peer-reviewed literature and were used in the last assessment of the IPCC. In addition, new versions of the models that were used in 2013 to estimate revised SC-CO_2 values were published in the peer-reviewed literature. Although uncertainties remain, the revised estimates that were issued in November 2013 are based on the best available scientific information on the impacts of climate change. The current estimates of the SC-CO_2 have been developed over many years, using the best science available, and with input from the public. As noted previously, in November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SC-CO_2 estimates. 78 FR 70586 (Nov. 26, 2013). In July 2015, OMB published a detailed summary and formal response to the many comments that were received. DOE stands ready to work with OMB and the other members of the IWG on further review and revision of the SC-CO_2 estimates as appropriate.

The GAO report mentioned by IECA noted that the working group's processes and methods used consensus-based decision making, relied on existing academic literature and models, and took steps to disclose limitations and incorporate new information.[50]

IECA stated that the SC-CO_2 estimates must be made consistent with OMB Circular A–4, and noted that it uses a lower discount rate than recommended by OMB Circular A–4 and values global benefits rather than solely U.S. domestic benefits. (IECA, No. 0015 at p. 5)

[49] In November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SC-CO2 estimates. 78 FR 70586. In July 2015 OMB published a detailed summary and formal response to the many comments that were received: This is available at *https://www.whitehouse.gov/blog/2015/07/02/estimating-benefits-carbon-dioxide-emissions-reductions.* It also stated its intention to seek independent expert advice on opportunities to improve the estimates, including many of the approaches suggested by commenters.

[50] *http://www.gao.gov/products/GAO-14-663.* (Last accessed Sept. 22, 2016)

OMB Circular A–4 [51] provides two suggested discount rates for use in regulatory analysis: 3% and 7%. Circular A–4 states that the 3% discount rate is appropriate for ''regulation [that] primarily and directly affects private consumption (*e.g.,* through higher consumer prices for goods and services).'' (OMB Circular A–4 p. 33). The interagency working group that developed the SC-CO_2 values for use by Federal agencies examined the economics literature and concluded that the consumption rate of interest is the correct concept to use in evaluating the net social costs of a marginal change in CO_2 emissions, as the impacts of climate change are measured in consumption-equivalent units in the three models used to estimate the SC-CO_2. The interagency working group chose to use three discount rates to span a plausible range of constant discount rates: 2.5, 3, and 5 percent per year. The central value, 3 percent, is consistent with estimates provided in the economics literature and OMB's Circular A–4 guidance for the consumption rate of interest.

Regarding the use of global SC-CO_2 values, DOE's analysis estimates both global and domestic benefits of CO_2 emissions reductions. Following the recommendation of the IWG, DOE places more focus on a global measure of SC-CO_2. The climate change problem is highly unusual in at least two respects. First, it involves a global externality: Emissions of most greenhouse gases contribute to damages around the world even when they are emitted in the United States. Consequently, to address the global nature of the problem, the SC-CO_2 must incorporate the full (global) damages caused by GHG emissions. Second, climate change presents a problem that the United States alone cannot solve. Even if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change. Other countries would also need to take action to reduce emissions if significant changes in the global climate are to be avoided. Emphasizing the need for a global solution to a global problem, the United States has been actively involved in seeking international agreements to reduce emissions and in encouraging other nations, including emerging major economies, to take significant steps to reduce emissions. When these considerations are taken as a whole, the interagency group concluded that a global measure of the benefits from reducing U.S. emissions is preferable. DOE's approach is not in contradiction of the requirement to weigh the need for national energy conservation, as one of the main reasons for national energy conservation is to contribute to efforts to mitigate the effects of global climate change.

IECA stated that the social cost of carbon places U.S. manufacturing at a distinct competitive disadvantage. IECA added that the higher SC-CO_2 cost drives manufacturing companies offshore and increases imports of more carbon-intensive manufactured goods. (IECA, No. 0015 at pp. 1–2) DOE notes that the SC-CO_2 is not a cost imposed on any manufacturers. It is simply a metric that Federal agencies use to estimate the societal benefits of policy actions that reduce CO_2 emissions.

IECA stated that the social cost of carbon value is unrealistically high in comparison to carbon market prices. (IECA, No. 0015 at p. 3) The SC-CO_2 is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year, whereas carbon trading prices in existing markets are simply a function of the demand and supply of tradable permits in those markets. Such prices depend on the arrangements in specific carbon markets, and bear no necessary relation to the damages associated with an incremental increase in carbon emissions.

2. Social Cost of Other Air Pollutants

As noted previously, DOE estimated how the considered energy conservation standards would decrease power sector NO_X emissions in those 22 States not affected by the CSAPR.

DOE estimated the monetized value of NO_X emissions reductions from electricity generation using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards.[52] The report includes high and low values for NO_X (as $PM_{2.5}$) for 2020, 2025, and 2030 using discount rates of 3 percent and 7 percent; these values are presented in appendix 14B of the final rule TSD. DOE primarily relied on the low estimates to be conservative.[53] The national average low values for 2020 (in 2015$) are $3,187/ton at 3-percent discount rate and $2,869/ton at 7-percent discount rate. DOE developed values specific to the sector for UPSs using a method described in appendix 14B of the final rule TSD. For this analysis DOE used linear interpolation to define values for the years between 2020 and 2025 and between 2025 and 2030; for years beyond 2030 the value is held constant.

DOE multiplied the emissions reduction (in tons) in each year by the associated $/ton values, and then discounted each series using discount rates of 3 percent and 7 percent as appropriate.

DOE is evaluating appropriate monetization of reduction in other emissions in energy conservation standards rulemakings. DOE has not included monetization of those emissions in the current analysis.

M. Utility Impact Analysis

The utility impact analysis estimates several effects on the electric power generation industry that would result from the adoption of new or amended energy conservation standards. The utility impact analysis estimates the changes in installed electrical capacity and generation that would result for each TSL. The analysis is based on published output from the NEMS associated with *AEO2016.* NEMS produces the *AEO* Reference case, as well as a number of side cases that estimate the economy-wide impacts of changes to energy supply and demand. For the current analysis, impacts are quantified by comparing the levels of electricity sector generation, installed capacity, fuel consumption and emissions consistent with the projections described on page E–8 of *AEO 2016* and various side cases. Details of the methodology are provided in the appendices to chapters 13 and 15 of the final rule TSD.

The output of this analysis is a set of time-dependent coefficients that capture the change in electricity generation,

[51] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

[52] Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See Tables 4A–3, 4A–4, and 4A–5 in the report. *The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. Chamber of Commerce, et al.* v. *EPA, et al., Order in Pending Case, 577 U.S. __(2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan.*

[53] For the monetized NO_X benefits associated with $PM_{2.5}$, the related benefits are primarily based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009), which is the lower of the two EPA central tendencies. Using the lower value is more conservative when making the policy decision concerning whether a particular standard level is economically justified. If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2012), the values would be nearly two-and-a-half times larger. (See chapter 14 of the final rule TSD for citations for the studies mentioned above.)

primary fuel consumption, installed capacity and power sector emissions due to a unit reduction in demand for a given end use. These coefficients are multiplied by the stream of electricity savings calculated in the NIA to provide estimates of selected utility impacts of potential new or amended energy conservation standards.

EEI disagreed with DOE's utility impact analysis, believing the results are overstated. EEI believes that 0 MW of capacity will be installed with or without the proposed standards coming into effect, and that there should be no estimated savings associated with ''avoiding'' renewable capacity that will be built anyway. (EEI, No. 0021 at pp. 7–8) DOE's analysis does not estimate how much new power plant capacity will not be installed as a result of lower demand caused by standards. Rather, the analysis estimates the difference in total installed capacity in the standards case compared to the base case. The lower electricity demand could allow more coal-fired capacity to be retired, and also mean that less renewable capacity will be needed.

N. Employment Impact Analysis

DOE considers employment impacts in the domestic economy as one factor in selecting a standard. Employment impacts from new or amended energy conservation standards include both direct and indirect impacts. Direct employment impacts are any changes in the number of employees of manufacturers of the products subject to standards, their suppliers, and related service firms. The MIA addresses those impacts. Indirect employment impacts are changes in national employment that occur due to the shift in expenditures and capital investment caused by the purchase and operation of more-efficient appliances. Indirect employment impacts from standards consist of the net jobs created or eliminated in the national economy, other than in the manufacturing sector being regulated, caused by (1) reduced spending by consumers on energy, (2) reduced spending on new energy supply by the utility industry, (3) increased consumer spending on the products to which the new standards apply and other goods and services, and (4) the effects of those three factors throughout the economy.

One method for assessing the possible effects on the demand for labor of such shifts in economic activity is to compare sector employment statistics developed by the Labor Department's Bureau of Labor Statistics (BLS). BLS regularly publishes its estimates of the number of jobs per million dollars of economic activity in different sectors of the economy, as well as the jobs created elsewhere in the economy by this same economic activity. Data from BLS indicate that expenditures in the utility sector generally create fewer jobs (both directly and indirectly) than expenditures in other sectors of the economy.[54] There are many reasons for these differences, including wage differences and the fact that the utility sector is more capital-intensive and less labor-intensive than other sectors. Energy conservation standards have the effect of reducing consumer utility bills. Because reduced consumer expenditures for energy likely lead to increased expenditures in other sectors of the economy, the general effect of efficiency standards is to shift economic activity from a less labor-intensive sector (*i.e.,* the utility sector) to more labor-intensive sectors (*e.g.,* the retail and service sectors). Thus, the BLS data suggest that net national employment may increase due to shifts in economic activity resulting from energy conservation standards.

DOE estimated indirect national employment impacts for the standard levels considered in this final rule using an input/output model of the U.S. economy called Impact of Sector Energy Technologies version 4 (ImSET).[55] ImSET is a special-purpose version of the ''U.S. Benchmark National Input-Output'' (I–O) model, which was designed to estimate the national employment and income effects of energy-saving technologies. The ImSET software includes a computer- based I–O model having structural coefficients that characterize economic flows among 187 sectors most relevant to industrial, commercial, and residential building energy use.

DOE notes that ImSET is not a general equilibrium forecasting model, and understands the uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Because ImSET does not incorporate price changes, the employment effects predicted by ImSET may over-estimate actual job impacts over the long run for this rule. Therefore, DOE used ImSET only to generate results for near-term timeframes (2019–2025), where these uncertainties are reduced. For more details on the employment impact analysis, see chapter 16 of the final rule TSD.

V. Analytical Results and Conclusions

The following section addresses the results from DOE's analyses with respect to the considered energy conservation standards for UPSs. It addresses the TSLs examined by DOE, the projected impacts of each of these levels if adopted as energy conservation standards for UPSs, and the standards levels that DOE is adopting in this final rule. Additional details regarding DOE's analyses are contained in the final rule TSD supporting this document.

A. Trial Standard Levels

DOE analyzed the benefits and burdens of four TSLs for UPSs. These TSLs were developed by combining specific efficiency levels for each of the product classes analyzed by DOE. DOE presents the results for the TSLs in this document, while the results for all efficiency levels that DOE analyzed are in the final rule TSD.

Table V–1 presents the TSLs and the corresponding efficiency levels that DOE has identified for potential energy conservation standards for UPSs. TSL 4 represents the maximum technologically feasible (''max-tech'') energy efficiency for all product classes. TSL 3 represents maximum NES while at positive NPV in aggregate across all three product classes (the NPV of VFD UPSs is negative). TSL 2 represents maximum energy savings at positive NPV for all product classes. TSL 1 represents the minimum possible standard considered, and also corresponds to the maximum consumer NPV for each product class.

[54] See U.S. Department of Commerce–Bureau of Economic Analysis. *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II).* 1997. U.S. Government Printing Office: Washington, DC. Available at *http://www.bea.gov/scb/pdf/regional/perinc/meth/rims2.pdf.*

[55] Livingston, O.V., S.R. Bender, M.J. Scott, and R.W. Schultz. *ImSET 4.0: Impact of Sector Energy Technologies Model Description and User's Guide.* 2015. Pacific Northwest National Laboratory: Richland, WA. PNNL–24563.

TABLE V–1 TRIAL STANDARD LEVELS FOR UPSS

Product class	Description	Trial standard level			
		TSL 1	TSL 2	TSL 3	TSL 4
10a	VFD UPSs	EL 1	EL 1	EL 2	EL 3
10b	VI UPSs	EL 1	EL 2	EL 2	EL 3
10c	VFI UPSs	EL 1	EL 1	EL 1	EL 3

B. Economic Justification and Energy Savings

1. Economic Impacts on Individual Consumers

DOE analyzed the economic impacts on UPS consumers by looking at the effects that potential new standards at each TSL would have on the LCC and PBP. DOE also examined the impacts of potential standards on selected consumer subgroups. These analyses are discussed below.

a. Life-Cycle Cost and Payback Period

In general, higher-efficiency products affect consumers in two ways: (1) Purchase price increases and (2) annual operating costs decrease. Inputs used for calculating the LCC and PBP include total installed costs (*i.e.,* product price plus installation costs), and operating costs (*i.e.,* annual energy use, energy prices, energy price trends, repair costs, and maintenance costs). The LCC calculation also uses product lifetime and a discount rate. Chapter 8 of the final rule TSD provides detailed information on the LCC and PBP analyses.

Table V–2 through Table V–7 show the LCC and PBP results for the TSLs considered for each product class. In the first of each pair of tables, the simple payback is measured relative to the baseline product. In the second table, the impacts are measured relative to the efficiency distribution in the in the no-new-standards case in the compliance year (see section IV.F.8 of this document). Because some consumers purchase products with higher efficiency in the no-new-standards case, the average savings are less than the difference between the average LCC of the baseline product and the average LCC at each TSL. The savings refer only to consumers who are affected by a standard at a given TSL. Those who already purchase a product with efficiency at or above a given TSL are not affected. Consumers for whom the LCC increases at a given TSL experience a net cost.

TABLE V–2—AVERAGE LCC AND PBP RESULTS FOR PRODUCT CLASS 10a

[VFD UPSs]

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
Residential:							
	Baseline	98	16	72	169		5.0
1	1	92	8	34	126	0	5.0
2	1	92	8	34	126	*0	5.0
3	2	121	5	23	144	2.2	5.0
4	3	139	3	13	152	3.2	5.0
Commercial:							
	Baseline	70	12	50	121		5.0
1	1	66	6	24	90	0	5.0
2	1	66	6	24	90	*0	5.0
3	2	91	4	16	107	2.6	5.0
4	3	107	2	9	116	3.8	5.0

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

*The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

TABLE V–3—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PRODUCT CLASS 10a

[VFD UPSs]

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings* (2015$)	Percent of consumers that experience net cost
Residential:			
1	1	43	0
2	1	43	**0
3	2	−1	50

TABLE V–3—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PRODUCT CLASS 10a—Continued

[VFD UPSs]

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings * (2015$)	Percent of consumers that experience net cost
4	3	−9	75
Commercial:			
1	1	31	0
2	1	31	** 0
3	2	−5	51
4	3	−13	81

* The savings represent the average LCC for affected consumers.

** The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

TABLE V–4—AVERAGE LCC AND PBP RESULTS FOR PRODUCT CLASS 10b

[VI UPSs]

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
Residential:							
	Baseline	111	22	124	235		6.3
1	1	141	13	72	213	3.1	6.3
2	2	162	9	52	214	3.9	6.3
3	2	162	9	52	214	3.9	6.3
4	3	623	6	32	655	31	6.3
Commercial:							
	Baseline	80	16	87	167		6.3
1	1	106	10	50	156	3.5	6.3
2	2	125	7	36	161	4.7	6.3
3	2	125	7	36	161	4.7	6.3
4	3	533	4	22	556	37	6.3

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V–5—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PRODUCT CLASS 10b

[VI UPSs]

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings * (2015$)	Percent of consumers that experience net cost
Residential:			
1	1	23	8
2	2	14	41
3	2	14	41
4	3	−428	100
Commercial:			
1	1	11	9
2	2	2	51
3	2	2	51
4	3	−392	100

* The savings represent the average LCC for affected consumers.

TABLE V–6—AVERAGE LCC AND PBP RESULTS FOR PRODUCT CLASS 10c

[VFI UPSs]

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
Residential:							
	Baseline	409	125	1,037	1,445		10.0
1	1	460	111	919	1,379	3.6	10.0
2	1	460	111	919	1,379	3.6	10.0
3	1	460	111	919	1,379	3.6	10.0
4	3	1,181	72	594	1,776	14	10.0
Commercial:							
	Baseline	293	88	685	978		10.0
1	1	339	78	607	946	4.5	10.0
2	1	339	78	607	946	4.5	10.0
3	1	339	78	607	946	4.5	10.0
4	3	975	51	393	1,368	18	10.0

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V–7—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR PRODUCT CLASS 10c

[VFI UPSs]

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC Savings* (2015$)	Percent of consumers that experience net cost
Residential:			
1	1	66	3
2	1	66	3
3	1	66	3
4	3	−344	91
Commercial:			
1	1	32	2
2	1	32	2
3	1	32	2
4	3	−393	100

* The savings represent the average LCC for affected consumers.

b. Consumer Subgroup Analysis

In the consumer subgroup analysis, DOE estimated the impact of the considered TSLs on low-income households and small businesses. Table V–8 through Table V–13 compares the average LCC savings and PBP at each efficiency level for the consumer subgroups, along with the average LCC savings for the entire consumer sample. In most cases, the average LCC savings and PBP for low-income households and small businesses at the considered efficiency levels are not substantially different from the average for all households. Chapter 11 of the final rule TSD presents the complete LCC and PBP results for the subgroups.

TABLE V–8—COMPARISON OF LCC SAVINGS AND PBP FOR LOW-INCOME HOUSEHOLDS AND ALL HOUSEHOLDS FOR PRODUCT CLASS 10a

[VFD UPSs]

TSL	Average life-cycle cost savings (2015$)		Simple payback period (years)	
	Low-income households	All households	Low-income households	All households
1	47	43	0.0	0.0
2	47	43	*0.0	*0.0
3	1	−1	2.0	2.2
4	−7	−9	2.9	3.2

* The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

TABLE V–9—COMPARISON OF LCC SAVINGS AND PBP FOR LOW-INCOME HOUSEHOLDS AND ALL HOUSEHOLDS FOR PRODUCT CLASS 10b

[VI UPSs]

TSL	Average life-cycle cost savings (2015$)		Simple payback period (years)	
	Low-income households	All households	Low-income households	All households
1	27	23	2.9	3.1
2	18	14	3.6	3.9
3	18	14	3.6	3.9
4	−424	−428	29	31

TABLE V–10—COMPARISON OF LCC SAVINGS AND PBP FOR LOW-INCOME HOUSEHOLDS AND ALL HOUSEHOLDS FOR PRODUCT CLASS 10c

[VFI UPSs]

TSL	Average life-cycle cost savings (2015$)		Simple payback period (years)	
	Low-income households	All households	Low-income households	All households
1	75	66	3.4	3.6
2	75	66	3.4	3.6
3	75	66	3.4	3.6
4	−313	−344	13	14

TABLE V–11—COMPARISON OF LCC SAVINGS AND PBP FOR SMALL BUSINESSES AND ALL BUSINESSES FOR PRODUCT CLASS 10a

[VFD UPSs]

TSL	Average life-cycle cost savings (2015$)		Simple payback period (years)	
	Small businesses	All businesses	Small businesses	All businesses
1	30	31	0.0	0.0
2	30	31	*0.0	*0.0
3	−5	−5	2.6	2.6
4	−14	−13	3.8	3.8

*The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

TABLE V–12—COMPARISON OF LCC SAVINGS AND PBP FOR SMALL BUSINESSES AND ALL BUSINESSES FOR PRODUCT CLASS 10b

[VI UPSs]

TSL	Average life-cycle cost savings (2015$)		Simple payback period (years)	
	Small businesses	All businesses	Small businesses	All businesses
1	9	11	3.7	3.7
2	1	2	4.7	4.7
3	1	2	4.7	4.7
4	−394	−392	37	37

TABLE V–13—COMPARISON OF LCC SAVINGS AND PBP FOR SMALL BUSINESSES AND ALL BUSINESSES FOR PRODUCT CLASS 10c

[VFI UPSs]

TSL	Average life-cycle cost savings (2015$)		Simple payback period (years)	
	Small businesses	All businesses	Small businesses	All businesses
1	29	32	4.5	4.5
2	29	32	4.5	4.5
3	29	32	4.5	4.5
4	−402	−393	18	18

c. Rebuttable Presumption Payback

As discussed in section IV.F.9, EPCA establishes a rebuttable presumption that an energy conservation standard is economically justified if the increased purchase cost for a product that meets the standard is less than three times the value of the first-year energy savings resulting from the standard. In calculating a rebuttable presumption payback period for each of the considered TSLs, DOE used discrete values, and, as required by EPCA, based the energy use calculation on the DOE test procedures for UPSs. In contrast, the PBPs presented in section V.B.1.a were calculated using distributions that reflect the range of energy use in the field.

Table V–14 presents the rebuttable-presumption payback periods for the considered TSLs for UPSs. While DOE examined the rebuttable-presumption criterion, it considered whether the standard levels considered for this rule are economically justified through a more detailed analysis of the economic impacts of those levels, pursuant to 42 U.S.C. 6295(o)(2)(B)(i), that considers the full range of impacts to the consumer, manufacturer, Nation, and environment. The results of that analysis serve as the basis for DOE to definitively evaluate the economic justification for a potential standard level, thereby supporting or rebutting the results of any preliminary determination of economic justification.

TABLE V–14—REBUTTABLE-PRESUMPTION PAYBACK PERIODS

TSL	10a (VFD UPSs)	10b (VI UPSs)	10c (VFI UPSs)
Residential:			
1	0	3.1	3.6
2	*0	3.9	3.6
3	2.2	3.9	3.6
4	3.2	31	14
Commercial:			
1	0	3.7	4.5
2	*0	4.7	4.5
3	2.6	4.7	4.5
4	3.8	37	18

*The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

2. Economic Impacts on Manufacturers

DOE performed an MIA to estimate the impact of new energy conservation standards on UPS manufacturers. The following section describes the estimated impacts on UPS manufacturers at each analyzed TSL. Chapter 12 of the final rule TSD explains the analysis in further detail.

a. Industry Cash Flow Analysis Results

Table V–15 and Table V–16 present the financial impacts (represented by changes in INPV) of analyzed standards on UPS manufacturers as well as the conversion costs that DOE estimates UPS manufacturers would incur at each TSL. To evaluate the range of cash-flow impacts on the UPS industry, DOE modeled two markup scenarios that correspond to the range of anticipated market responses to new standards. Each scenario results in a unique set of cash flows and corresponding industry values at each TSL.

In the following discussion, the INPV results refer to the difference in industry value between the no-standards case and the standards cases that result from the sum of discounted cash flows from the reference year (2016) through the end of the analysis period (2048). The results also discuss the difference in cash flows between the no-standards case and the standards cases in the year before the compliance date for new standards. This difference in cash flow represents the size of the required conversion costs relative to the cash flow generated by the UPS industry in the absence of new energy conservation standards.

To assess the upper (less severe) bound of the range of potential impacts on UPS manufacturers, DOE modeled a preservation of gross margin markup scenario. This scenario assumes that in the standards cases, manufacturers would be able to fully pass on higher production costs required to produce more efficient products to their consumers. Specifically, the industry would be able to maintain its average no-standards case gross margin (as a percentage of revenue) despite the higher product costs in the standards cases. In general, the larger the product price increases, the less likely manufacturers are to achieve the cash flow from operations calculated in this scenario because it is less likely that

manufacturers would be able to fully mark up these larger cost increases.

To assess the lower (more severe) bound of the range of potential impacts on manufacturers, DOE modeled the pass through markup scenario. In this scenario DOE assumes that manufacturers are able to pass through the incremental costs of more efficient UPSs to their customers, but without earning any additional operating profit on those higher costs. This scenario represents the lower bound of the range of potential impacts on manufacturers because manufacture margins are compressed as a result of this markup scenario.

TABLE V–15—MANUFACTURER IMPACT ANALYSIS FOR UNINTERRUPTIBLE POWER SUPPLIES—PRESERVATION OF GROSS MARGIN MARKUP SCENARIO

	Units	No standards case	Trial standard level			
			1	2	3	4
INPV	2015$ millions	2,575	2,737	2,832	2,964	7,376
Change in INPV	2015$ millions		162	257	389	4,801
	%		6.3	10.0	15.1	186.4
Product Conversion Costs	2015$ millions		28	35	38	44
Capital Conversion Costs	2015$ millions		9	11	12	14
Total Conversion Costs	2015$ millions		36	47	50	58

TABLE V–16—MANUFACTURER IMPACT ANALYSIS FOR UNINTERRUPTIBLE POWER SUPPLIES—PASS THROUGH MARKUP SCENARIO

	Units	No standards case	Trial standard level			
			1	2	3	4
INPV	2015$ millions	2,575	2,167	1,939	1,599	(691)
Change in INPV	2015$ millions		(409)	(636)	(976)	(3,266)
	%		(15.9)	(24.7)	(37.9)	(126.8)
Product Conversion Costs	2015$ millions		28	35	38	44
Capital Conversion Costs	2015$ millions		9	11	12	14
Total Conversion Costs	2015$ millions		36	47	50	58

* Numbers in parentheses indicate negative numbers.

TSL 1 sets the efficiency level at EL 1 for all UPSs. At TSL 1, DOE estimates impacts on INPV to range from −$409 million to $162 million, or a change in INPV of −15.9 percent to 6.3 percent. At this TSL, industry free cash flow is estimated to decrease by approximately 15.2 percent to $74 million, compared to the no-standards case value of $87 million in 2018, the year leading up to the adopted standards.

As TSLs approach max-tech, the number of UPS shipments that do not meet required efficiency levels, and subsequently the number of UPSs requiring redesign, increases. Conversion costs scale with the increased number of UPSs that require redesign to meet efficiency levels. At TSL 1, DOE estimates that UPS manufacturers will incur a total of $36 million in conversion costs. DOE estimates that manufacturers will incur $28 million in product conversion costs at TSL 1 as manufacturers comply with test procedure requirements and increase R&D efforts necessary to redesign UPSs that do not meet efficiency levels. Capital conversion costs are estimated to be $9 million at TSL 1, driven by investments in tooling required to print new circuit boards for redesigned UPSs.

At TSL 1, the shipment-weighted-average MPCs decrease by approximately 2 percent for VFD UPSs and increase by approximately 18 percent for VI UPSs and 10 percent for VFI UPSs relative to the no-standards case MPCs in 2019, the compliance year of the adopted standards. In the preservation of gross margin markup scenario, manufacturers are able to recover their $36 million in conversion costs over the course of the analysis period through the increases in MPCs for VI and VFI UPSs causing a slightly positive change in INPV at TSL 1 under the preservation of gross margin markup scenario.

Under the pass through markup scenario, the MPC increases at TSL 1 result in reductions in manufacturer markups from 1.57 in the no-standards case to 1.44 for VI UPSs and from 1.76 in the no-standards case to 1.67 for VFI UPSs at TSL 1. The MPC decrease for VFD UPSs at TSL 1 results in an increase in manufacturer markup from 1.55 in the no-standards case to 1.57 at TSL 1. The reductions in manufacturer markups for VI and VFI UPSs and $36 million in conversion costs incurred by manufacturers cause a moderately negative change in INPV at TSL 1 under the pass through markup scenario.

TSL 2 sets the efficiency level at EL 1 for VFD and VFI UPSs and EL 2 for VI UPSs. At TSL 2, DOE estimates impacts on INPV to range from −$636 million to $257 million, or a change in INPV of −24.7 percent to 10.0 percent. At this TSL, industry free cash flow is estimated to decrease by approximately 19.5 percent to $70 million, compared to the no-standards case value of $87 million in 2018, the year leading up to the adopted standards.

DOE expects higher conversion costs at TSL 2 than at TSL 1 because TSL 2 sets the efficiency level at EL 2 for VI UPSs, resulting in an increased number of VI UPSs that do not meet the efficiency levels required at this TSL. DOE estimates that manufacturers will incur a total of $47 million in conversion costs at TSL 2. DOE estimates that manufacturers will incur $35 million in product conversion costs at TSL 2 as manufacturers comply with test procedure requirements and increase R&D efforts necessary to redesign UPSs to meet the required efficiency levels at TSL 2. Capital conversion costs are estimated to be $11 million at TSL 2, driven by investments in tooling required to print new circuit boards for redesigned UPSs.

At TSL 2, the shipment-weighted-average MPCs decrease by approximately 2 percent for VFD UPSs and increase by approximately 38 percent for VI UPSs and 10 percent for VFI UPSs relative to the no-standards case MPCs in 2019, the compliance year of the standards. In the preservation of gross margin markup scenario, manufacturers are able to recover their $47 million in conversion costs over the course of the analysis period through the increases in MPCs for VI and VFI UPSs causing a moderately positive change in INPV at TSL 2 under the preservation of gross margin markup scenario.

Under the pass through markup scenario at TSL 2, the MPC increases result in reductions in manufacturer markups from 1.57 in the no-standards case to 1.37 for VI UPSs at TSL 2 and from 1.76 in the no-standards case to 1.67 for VFI UPSs at TSL 2. The MPC decrease for VFD UPSs at TSL 2 results in an increase in manufacturer markup from 1.55 in the no-standards case to 1.57 in the standards case at TSL 2. The reductions in manufacturer markups for VI and VFI UPSs and $47 million in conversion costs cause a significantly negative change in INPV at TSL 2 under the pass through markup scenario.

TSL 3 sets the efficiency level at EL 1 for VFI UPSs and EL 2 for VFD and VI UPSs. At TSL 3, DOE estimates impacts on INPV to range from −$976 million to $389 million, or a change in INPV of −37.9 percent to 15.1 percent. At this TSL, industry free cash flow is estimated to decrease by approximately 20.9 percent to $69 million, compared to the no-standards case value of $87 million in 2018, the year leading up to the adopted standards.

DOE estimates that manufacturers will incur a total of $50 million in conversion costs at TSL 3. DOE estimates that manufacturers will incur $38 million in product conversion costs at TSL 3 as manufacturers comply with test procedure requirements and increase R&D efforts necessary to redesign VFD and VI UPSs to have best-in-market efficiency and VFI UPSs to meet the required efficiency level at TSL 3. Capital conversion costs are estimated to be $12 million at TSL 3, driven by investments in tooling required to print new circuit boards for redesigned UPSs.

At TSL 3, the shipment-weighted-average MPCs increase by approximately 25 percent for VFD UPSs, 38 percent for VI UPSs, and 10 percent for VFI UPSs relative to the no-standards case MPCs in 2019, the compliance year of the adopted standards. In the preservation of gross margin markup scenario, manufacturers are able to recover their $50 million in conversion costs over the course of the analysis period through the increases in MPCs causing a moderately positive change in INPV at TSL 3 under the preservation of gross margin markup scenario.

Under the pass through markup scenario at TSL 3, the increases in shipment-weighted-average MPCs result in reductions in manufacturer markups, from 1.55 in the no-standards case to 1.43 for VFD UPSs at TSL 3, from 1.57 in the no-standards case to 1.37 for VI UPSs at TSL 3, and from 1.76 in the no-standards case to 1.67 for VFI UPSs at TSL 3. The reductions in manufacturer markups and $50 million in conversion costs incurred by manufacturers cause a significantly negative change in INPV at TSL 3 under the pass through markup scenario.

TSL 4 sets the efficiency level at EL 3 for all UPSs, which represents max-tech. At TSL 4, DOE estimates impacts on INPV to range from −$3,266 million to $4,801 million, or a change in INPV of −126.8 percent to 186.4 percent. At this TSL, industry free cash flow is estimated to decrease by approximately 24.3 percent to $66 million, compared to the no-standards case value of $87 million in 2018, the year leading up to the adopted standards.

DOE expects that manufacturers will incur higher total conversion costs at TSL 4 than at any of the lower TSLs because manufacturers will required to redesign the vast majority of their UPSs to meet max-tech. DOE estimates that manufacturers will incur $44 million in product conversion costs as manufacturers comply with test procedure requirements and increase R&D efforts necessary to redesign UPSs to meet max-tech at TSL 4. Capital conversion costs are estimated to be $14 million at TSL 4, driven by investments in tooling required to print new circuit boards for the majority of UPSs.

At TSL 4, the shipment-weighted-average MPCs increase significantly by approximately 46 percent for VFD UPSs, 489 percent for VI UPSs, and 207 percent for VFI UPSs relative to the no-standards case MPCs in 2019, the compliance year of the adopted standards. In the preservation of gross margin markup scenario, manufacturers are able to recover their $58 million in conversion costs over the course of the analysis period through the increases in MPCs causing a significantly positive change in INPV at TSL 4 under the preservation of gross margin markup scenario.

Under the pass through markup scenario at TSL 4, the MPC increases result in reductions in manufacturer markups, from 1.55 in the no-standards case to 1.36 for VFD UPSs at TSL 4, from 1.57 in the no-standards case to 1.30 for VI UPSs at TSL 4, and from 1.76 in the no-standards case to 1.30 for VFI UPSs at TSL 4. The reductions in manufacturer markups and $58 million in conversion costs incurred by manufacturers cause a significantly negative change in INPV at TSL 4 under the pass through markup scenario.

b. Impacts on Employment

Manufacturer interviews, comment responses to the August 2016 NOPR, and DOE's research indicate that all UPS components that would be modified to improve the efficiency of UPSs are manufactured abroad (Schneider Electric, Pub. Mtg. Tr., No. 0014 at p. 72). DOE was able to identify a handful of UPS manufacturers that do assemble these UPS components domestically. Based on manufacturer interviews, DOE stated in the August 2016 NOPR that there would most likely not be an impact on the amount of domestic workers involved in the assembly of UPSs due to new energy conservation standards. 81 FR 52230. Subsequently, DOE did not conduct a quantitative domestic employment impact analysis on UPS manufacturers in the August 2016 NOPR.

NEMA and Schneider Electric commented that manufacturers may move their assembly abroad as testing and assembling compliant UPSs becomes more expensive (Schneider Electric, No. 0017 at p. 20). NEMA went on to reference the number of companies listed in the Online Certifications Directory from Underwriters Laboratories [56] with the ''YEDU'' UPS category code as examples of UPS manufacturers with domestic assembly that could be moved abroad due to adopted standards (NEMA and ITI, No. 0019 at p. 15). In the final rule, DOE quantified the potential impacts on domestic UPS assembly employment. DOE recognizes that while there is no domestic UPS production, or production employees, there could be impacts to domestic UPS assembly employment as a result of adopted standards. DOE reviewed the Online Certifications Directory from Underwriters Laboratories and used the listings to determine the proportion of UPS assembly that takes place in the United States. DOE found 83 manufacturer listings registered under

[56] Underwriters Laboratories. Online Certifications Directory. Last Accessed October 10, 2016. *http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html?utm_source=ulcom&utm_medium=web&utm_campaign=database.*

the ''YEDU'' code for certification of UPS models. DOE did not include any manufacturer listings registered with Underwriters Laboratories for certification of products outside the scope of this rulemaking, such as remote battery supply cabinets. Of the 83 total listings registered for certification of UPS models, DOE found 45 UPS manufacturers with domestic facilities. Using these listings, DOE determined that approximately 54 percent of UPS assembly takes place in the United States.

DOE used the GRIM to estimate the domestic assembly expenditures and the number of domestic assembly workers in the no-standards case at each TSL. DOE used statistical data from the U.S. Census Bureau's 2014 Annual Survey of Manufacturers to calculate labor expenditures associated with the North American Industry Classification System (NAICS) code 335999. DOE estimated that 10 percent of labor expenditures for this NAICS code is attributed to UPS assembly expenditures in the no-standards case.

Table V–17 represents the potential impacts the adopted standards could have on domestic UPS assembly employment. The upper bound of the results estimates the maximum change in the number of assembly workers that could occur after compliance with adopted energy conservation standards when assuming that manufacturers continue to assemble the same scope of covered products. It also assumes that domestic assembly does not shift to lower labor-cost countries. To address the risk of manufacturers choosing to assemble UPSs abroad, the lower bound of the employment results estimate the maximum decrease in domestic UPS assembly workers in the industry if some or all existing assembly was moved outside of the United States. While the results present a range of estimates, the following sections also include qualitative discussions of the impacts on UPS assembly at the various TSLs. Finally, the domestic UPS assembly employment impacts shown are independent of the employment impacts from the broader U.S. economy, documented in chapter 17 of the final rule TSD.

DOE estimates that in the absence of new energy conservation standards, there would be approximately 206 domestic employees involved in assembling UPSs in 2019. Table V–17 presents the range of potential impacts of adopted energy conservation standards on domestic assembly workers in the UPS industry.

TABLE V–17—POTENTIAL CHANGES IN THE TOTAL NUMBER OF DOMESTIC UNINTERRUPTABLE POWER SUPPLY ASSEMBLY WORKERS IN 2019

	No standards case	Trial standard level			
		1	2	3	4
Total Number of Domestic Assembly Workers in 2019 (without changes in production locations)	206	206	206	206	206
Potential Changes in Domestic Assembly Workers in 2019*		0–(41)	0–(62)	0–(103)	0–(206)

* DOE presents a range of potential employment impacts. Numbers in parentheses indicate negative numbers.

At the upper end of the employment impact range, DOE does not expect any impact on the amount of domestic workers involved in the assembly of UPSs at the analyzed TSLs. While compliant UPS component configurations may change or become more costly, DOE estimates that the same amount of employees would be needed to assemble these products.

At the lower end of the range, DOE models a situation where some domestic employment associated with UPS assembly moves abroad as a result of new energy conservation standards. As UPS MPCs increase due to adopted standards, NEMA and Schneider stated that manufacturers may relocate domestic assembly facilities to countries with lower labor costs in an effort to reduce the total cost of UPS production (Schneider Electric, No. 0017 at p. 20) (NEMA and ITI, No. 0019 at p. 15). The lower end of the employment impact range represents these potential relocation decisions as decreases in domestic assembly employment at higher TSLs. At TSL 1, the TSL adopted in this final rule, DOE concludes that, based on the shipment analysis, manufacturer interviews, and the results of the domestic assembly employment analysis, manufacturers could face a moderate negative impact on domestic assembly employment due to the increased total cost of UPS assembly in 2019.

DOE also recognizes there are several UPS and UPS component manufacturers that have employees in the U.S. that work on design, technical support, sales, training, testing, certification, and other requirements. However, feedback from manufacturer interviews and comment responses to the August 2016 NOPR did not indicate there would be negative changes in the domestic employment of the design, technical support, or other departments of UPS and UPS component manufacturers located in the U.S. in response to new energy conservation standards.

c. Impacts on Manufacturing Capacity

UPS manufacturers stated that they did not anticipate any capacity constraints at any of the analyzed ELs, given a two-year timeframe from the publication of a final rule and the compliance year.

d. Impacts on Subgroups of Manufacturers

Using average cost assumptions to develop an industry cash-flow estimate may not be adequate for assessing differential impacts among manufacturer subgroups. Small manufacturers, niche product manufacturers, and manufacturers exhibiting cost structures substantially different from the industry average could be affected disproportionately. DOE identified one manufacturer subgroup that it believes could be disproportionally impacted by energy conservation standards and would require a separate analysis in the MIA, small businesses. DOE analyzes the impacts on small businesses in a separate analysis in section VI.B of this final rule as part of the Regulatory Flexibility Analysis. DOE did not identify any other adversely impacted manufacturer subgroups for this rulemaking based on the results of the industry characterization.

e. Cumulative Regulatory Burden

One aspect of assessing manufacturer burden involves considering the cumulative impact of multiple DOE

standards and the regulatory actions of other Federal agencies and States that affect the manufacturers of a covered product. A standard level is not economically justified if it contributes to an unacceptable cumulative regulatory burden. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook this cumulative regulatory burden. In addition to energy conservation standards, other regulations can significantly affect manufacturers' financial operations. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

Some UPS manufacturers could also make other products that could be subject to energy conservation standards set by DOE. DOE looks at these regulations that could affect UPS manufacturers that will take effect approximately 3 years before or after the estimated 2019 compliance date of adopted energy conservation standards for UPSs.[57] These energy conservation standards include distribution transformers [58], electric motors,[59] external power supplies,[60] metal halide lamp fixtures,[61] walk-in coolers and freezers,[62] battery chargers,[63] general service fluorescent lamps,[64] ceiling fan light kits,[65] dehumidifiers,[66] and single package vertical air conditioners and single package vertical heat pumps.[67]

The compliance dates and expected industry conversion costs of relevant energy conservation standards are presented in Table V–18. Included in the table are Federal regulations that have compliance dates three (and six) years before or after the UPS compliance date.

TABLE V–18—COMPLIANCE DATES AND EXPECTED CONVERSION EXPENSES OF FEDERAL ENERGY CONSERVATION STANDARDS AFFECTING UNINTERRUPTIBLE POWER SUPPLY MANUFACTURERS

Federal energy conservation standards	Number of manufacturers *	Number of manufacturers from this rule affected **	Compliance date	Estimated total industry conversion expense	Estimated total industry conversion expense as percentage of revenue ***
Distribution Transformers, 78 FR 23336 (April 18, 2013).	38	3	2016	$60.9 Million (2011$)	<1.0
Electric Motors, 79 FR 30933 (May 29, 2014).	7	2	2016	$84.6 Million (2013$)	1.2
External Power Supplies, 79 FR 7846 (February 10, 2014).	243	6	2016	$43.4 Million (2012$)	2.3
Residential Central Air Conditioners and Heat Pumps, 76 FR 37408 (June 27, 2011).	39	1	2016	$44.0 Million (2009$)	0.1
Metal Halide Lamp Fixtures, 79 FR 7745 (February 10, 2014).	101	5	2017	$25.7 Million (2012$)	2.3
Battery Chargers, 81 FR 38266 (June 13, 2016).	107	3	2018	$19.5 Million (2013$)	<1.0
General Service Fluorescent Lamps, 80 FR 4041 (January 26, 2015).	55	2	2018	$26.6 Million (2013$)	<1.0
Ceiling Fan Light Kits, 81 FR 580 (January 06, 2016).	67	2	2019	$18.9–$17.0 Million (2014$)	2.0 to 1.8
Dehumidifiers, 80 FR 38338 (June 13, 2016).	25	1	2019	$52.5 Million (2014$)	4.5
Single Package Vertical Air Conditioners and Single Package Vertical Heat Pumps, 80 FR 57438 (September 23, 2015).	9	1	2019	$9.2 Million (2014$)	1.9

[57] See the ‡ footnote in Table V–18 for more information on the timeframe examined as part of the cumulative regulatory burden analysis.

[58] Energy conservation standards for distribution transformers became effective on January 1, 2016. 78 FR 23336. [Docket Number EERE–2010–BT–STD–0048]

[59] Energy conservation standards for electric motors became effective on June 1, 2016. 79 FR 30933. [Docket Number EERE–2010–BT–STD–0027]

[60] Energy conservation standards for external power supplies became effective on February 10, 2016. 79 FR 7846. [Docket Number EERE–2008–BT–STD–0005]

[61] Energy conservation standards for metal halide lamp fixtures will become effective on February 10, 2017. 79 FR 7745. [Docket Number EERE–2009–BT–STD–0018]

[62] Energy conservation standards for walk-in coolers and freezers estimated to become effective on September 16, 2019. 81 FR 62980. [Docket Number EERE–2015–BT–STD–0016]

[63] Energy conservation standards for battery chargers will become effective on June 13, 2018. 81 FR 38266. [Docket Number EERE–2008–BT–STD–0005]

[64] Energy conservation standards for general service fluorescent lamps will become effective on January 26, 2018. 80 FR 4041 [Docket Number EERE–2011–BT–STD–0006]

[65] Energy conservation standards for ceiling fan light kits will become effective on January 7, 2019. 81 FR 580. [Docket Number EERE–2012–BT–STD–0045]

[66] Energy conservation standards for dehumidifiers will become effective on June 13, 2019. 80 FR 38338. [Docket Number EERE–2012–BT–STD–0027]

[67] Energy conservation standards for single package vertical air conditioners and single package vertical heat pumps will become effective on September 23, 2019. 80 FR 57438. [Docket Number EERE–2012–BT–STD–0041]

TABLE V–18—COMPLIANCE DATES AND EXPECTED CONVERSION EXPENSES OF FEDERAL ENERGY CONSERVATION STANDARDS AFFECTING UNINTERRUPTIBLE POWER SUPPLY MANUFACTURERS—Continued

Federal energy conservation standards	Number of manufacturers *	Number of manufacturers from this rule affected **	Compliance date	Estimated total industry conversion expense	Estimated total industry conversion expense as percentage of revenue ***
Walk-In Coolers and Freezers, 81 FR 62980 (September 16, 2016).	64	1	2019 †	$16.2 Million (2015$)	1.7
Fluorescent Lamp Ballasts, 76 FR 70548 (November 14, 2011) ‡.	41	2	2014	$74.0 Million (2010$)	2.7
Small Electric Motors, 75 FR 10874 (March 9, 2010) ‡.	5	1	2015	$51.3 Million (2009$)	3.1
Residential Water Heaters, 75 FR 20112 (April 16, 2010) ‡.	39	1	2015	$17.5 Million (2009$)	4.9

* The number of manufacturers listed in the final rule for the energy conservation standard that is contributing to cumulative regulatory burden.

** The number of manufacturers producing UPSs that are affected by the listed energy conservation standards.

*** This column presents conversion costs as a percentage of cumulative revenue for the industry during the conversion period. The conversion period is the timeframe over which manufacturers must make conversion costs investments and lasts from the announcement year of the final rule to the standards year of the final rule. This period typically ranges from 3 to 5 years, depending on the energy conservation standard.

† The final rule for this energy conservation standard has not been published. The data points in the table are estimates from the pre-publication stage.

‡ Consistent with Chapter 12 of the TSD, DOE has assessed whether this rule will have significant impacts on manufacturers that are also subject to significant impacts from other EPCA rules with compliance dates within three years of this rule's compliance date. However, DOE recognizes that a manufacturer incurs costs during some period before a compliance date as it prepares to comply, such as by revising product designs and manufacturing processes, testing products, and preparing certifications. As such, to illustrate a broader set of rules that may also create additional burden on manufacturers, DOE has included additional rules with compliance dates that fall within six years of the compliance date of this rule by expanding the timeframe of potential cumulative regulatory burden. Note that the inclusion of any given rule in this Table does not indicate that DOE considers the rule to contribute significantly to cumulative impact. DOE has chosen to broaden its list of rules in order to provide additional information about its rulemaking activities. DOE will continue to evaluate its approach to assessing cumulative regulatory burden for use in future rulemakings to ensure that it is effectively capturing the overlapping impacts of its regulations. DOE plans to seek public comment on the approaches it has used here (*i.e.,* both the 3 and 6 year timeframes from the compliance date) in order to better understand at what point in the compliance cycle manufacturers most experience the effects of cumulative and overlapping burden from the regulation of multiple products.

DOE discusses these and other requirements and includes the full details of the cumulative regulatory burden analysis in chapter 12 of the final rule TSD. DOE will continue to evaluate its approach to assessing cumulative regulatory burden for use in future rulemakings to ensure that it is effectively capturing the overlapping impacts of its regulations. DOE plans to seek public comment on the approaches it has used here (*i.e.,* both the 3 and 6 year timeframes from the compliance date) in order to better understand at what point in the compliance cycle manufacturers most experience the effects of cumulative and overlapping burden from the regulation of multiple product classes.

3. National Impact Analysis

This section presents DOE's estimates of the national energy savings and the NPV of consumer benefits that would result from each of the TSLs considered as potential amended standards.

a. Significance of Energy Savings

To estimate the energy savings attributable to potential new standards for UPSs, DOE compared their energy consumption under the no-new-standards case to their anticipated energy consumption under each TSL. The savings are measured over the entire lifetime of products purchased in the 30-year period that begins in the year of anticipated compliance with amended standards (2019–2048). Table V–19 presents DOE's projections of the national energy savings for each TSL considered for UPSs. The savings were calculated using the approach described in section IV.H.2 of this final rule.

TABLE V–19—CUMULATIVE NATIONAL ENERGY SAVINGS FOR UPSS; 30 YEARS OF SHIPMENTS

[2019–2048]

	Trial standard level			
	1	2	3	4
	(quads)			
Primary energy	0.90	1.1	1.2	2.9
FFC energy	0.94	1.2	1.3	3.0

OMB Circular A–4 [68] requires agencies to present analytical results, including separate schedules of the monetized benefits and costs that show the type and timing of benefits and costs. Circular A–4 also directs agencies to consider the variability of key elements underlying the estimates of benefits and costs. For this rulemaking, DOE undertook a sensitivity analysis using 9 years, rather than 30 years, of product shipments. The choice of a 9-year period is a proxy for the timeline in EPCA for the review of certain energy conservation standards and potential revision of and compliance with such revised standards.[69] The review timeframe established in EPCA is generally not synchronized with the product lifetime, product manufacturing cycles, or other factors specific to UPSs. Thus, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology. The NES sensitivity analysis results based on a 9-year analytical period are presented in Table V–20. The impacts are counted over the lifetime of UPSs purchased in 2019–2048.

TABLE V–20—CUMULATIVE NATIONAL ENERGY SAVINGS FOR UPSS; 9 YEARS OF SHIPMENTS

[2019–2048]

	Trial standard level			
	1	2	3	4
	(quads)			
Primary energy	0.21	0.26	0.28	0.66
FFC energy	0.21	0.27	0.30	0.69

b. Net Present Value of Consumer Costs and Benefits

DOE estimated the cumulative NPV of the total costs and savings for consumers that would result from the TSLs considered for UPSs. In accordance with OMB's guidelines on regulatory analysis,[70] DOE calculated NPV using both a 7-percent and a 3-percent real discount rate. Table V–21 shows the consumer NPV results with impacts counted over the lifetime of products purchased in 2019–2048.

TABLE V–21—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR UPSS; 30 YEARS OF SHIPMENTS

[2019–2048]

Discount rate (percent)	Trial standard level			
	1	2	3	4
	(billion 2015$)			
3	3.0	2.5	0.75	−53
7	1.3	1.0	0.03	−30

The NPV results based on the aforementioned 9-year analytical period are presented in Table V–22. The impacts are counted over the lifetime of products purchased in 2019–2048. As mentioned previously, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology or decision criteria.

TABLE V–22—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR UPSS; 9 YEARS OF SHIPMENTS

[2019–2048]

Discount rate (percent)	Trial standard level			
	1	2	3	4
	(billion 2015$)			
3	0.97	0.84	0.30	−16
7	0.61	0.48	0.05	−13

[68] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

[69] Section 325(m) of EPCA requires DOE to review its standards at least once every 6 years, and requires, for certain products, a 3-year period after any new standard is promulgated before compliance is required, except that in no case may any new standards be required within 6 years of the compliance date of the previous standards. While adding a 6-year review to the 3-year compliance period adds up to 9 years, DOE notes that it may undertake reviews at any time within the 6 year period and that the 3-year compliance date may yield to the 6-year backstop. A 9-year analysis period may not be appropriate given the variability that occurs in the timing of standards reviews and the fact that for some products, the compliance period is 5 years rather than 3 years.

[70] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

c. Indirect Impacts on Employment

DOE expects that amended energy conservation standards for UPSs will reduce energy expenditures for consumers of those products, with the resulting net savings being redirected to other forms of economic activity. These expected shifts in spending and economic activity could affect the demand for labor. As described in section IV.N of this document, DOE used an input/output model of the U.S. economy to estimate indirect employment impacts of the TSLs that DOE considered. DOE understands that there are uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Therefore, DOE generated results for near-term timeframes (2019–2025), where these uncertainties are reduced.

The results suggest that the adopted standards are likely to have a negligible impact on the net demand for labor in the economy. The net change in jobs is so small that it would be imperceptible in national labor statistics and might be offset by other, unanticipated effects on employment. Chapter 16 of the final rule TSD presents detailed results regarding anticipated indirect employment impacts.

4. Impact on Utility or Performance of Products

As discussed in section IV.C of this final rule, DOE has concluded that the standards adopted in this final rule will not lessen the utility or performance of UPSs under consideration in this rulemaking. Manufacturers of these products currently offer units that meet or exceed the adopted standards.

5. Impact of Any Lessening of Competition

DOE considered any lessening of competition that would be likely to result from new UPS standards. As discussed in section III.D.1.e, EPCA directs the Attorney General of the United States (Attorney General) to determine the impact, if any, of any lessening of competition likely to result from a proposed standard and to transmit such determination in writing to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. (42 U.S.C. 6295(o)(2)(B)(ii)) To assist the Attorney General in making this determination, DOE provided DOJ with copies of the August 2016 NOPR and the TSD for review. In its assessment letter responding to DOE, DOJ concluded that the proposed energy conservation standards for UPSs are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

6. Need of the Nation To Conserve Energy

Enhanced energy efficiency, where economically justified, improves the Nation's energy security, strengthens the economy, and reduces the environmental impacts (costs) of energy production. Reduced electricity demand due to energy conservation standards is also likely to reduce the cost of maintaining the reliability of the electricity system, particularly during peak-load periods. As a measure of this reduced demand, chapter 15 in the final rule TSD presents the estimated reduction in generating capacity, relative to the no-new-standards case, for the TSLs that DOE considered in this rulemaking.

Energy conservation resulting from potential energy conservation standards for UPSs is expected to yield environmental benefits in the form of reduced emissions of certain air pollutants and greenhouse gases. Table V–23 provides DOE's estimate of cumulative emissions reductions expected to result from the TSLs considered in this rulemaking. The emissions were calculated using the multipliers discussed in section IV.K of this document. DOE reports annual emissions reductions for each TSL in chapter 13 of the final rule TSD.

TABLE V–23—CUMULATIVE EMISSIONS REDUCTION FOR UPSS SHIPPED IN 2019–2048

	Trial standard level			
	1	2	3	4
Power Sector Emissions				
CO_2 (*million metric tons*)	46	58	64	148
SO_2 (*thousand tons*)	39	48	54	125
NO_X (*thousand tons*)	25	31	34	79
Hg (*tons*)	0.13	0.16	0.18	0.41
CH_4 (*thousand tons*)	5.0	6.2	7.0	16
N_2O (*thousand tons*)	0.72	0.89	0.99	2.3
Upstream Emissions				
CO_2 (*million metric tons*)	2.6	3.2	3.6	8.3
SO_2 (*thousand tons*)	0.31	0.39	0.43	1.0
NO_X (*thousand tons*)	38	47	52	122
Hg (*tons*)	0.00	0.00	0.00	0.00
CH_4 (*thousand tons*)	233	290	322	749
N_2O (*thousand tons*)	0.02	0.02	0.02	0.06
Total FFC Emissions				
CO_2 (*million metric tons*)	49	61	68	156
SO_2 (*thousand tons*)	39	49	54	126
NO_X (*thousand tons*)	63	78	87	201
Hg (*tons*)	0.13	0.16	0.18	0.41
CH_4 (*thousand tons*)	238	296	329	765
N_2O (*thousand tons*)	0.73	0.91	1.0	2.3

As part of the analysis for this rule, DOE estimated monetary benefits likely to result from the reduced emissions of CO_2 that DOE estimated for each of the considered TSLs for UPSs. As discussed in section 0 of this document, for CO_2, DOE used the most recent values for the SC-CO_2 developed by an interagency process. The four sets of SC-CO_2 values correspond to the average values from distributions that use a 5-percent discount rate, a 3-percent discount rate, a 2.5-percent discount rate, and the 95th-percentile values from a distribution that uses a 3-percent discount rate. The actual SC-CO_2 values used for emissions in each year are presented in appendix 14A of the final rule TSD.

Table V–24 presents the global value of CO_2 emissions reductions at each TSL. DOE calculated domestic values as a range from 7 percent to 23 percent of the global values; these results are presented in chapter 14 of the final rule TSD.

TABLE V–24—PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR UPSS SHIPPED IN 2019–2048

TSL	SC-CO_2 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	375	1,659	2,612	5,050
2	467	2,065	3,251	6,286
3	521	2,301	3,621	7,003
4	1,189	5,280	8,322	16,080

DOE is well aware that scientific and economic knowledge about the contribution of CO_2 and other GHG emissions to changes in the future global climate and the potential resulting damages to the world economy continues to evolve rapidly. Thus, any value placed on reduced CO_2 emissions in this rulemaking is subject to change. DOE, together with other Federal agencies, will continue to review various methodologies for estimating the monetary value of reductions in CO_2 and other GHG emissions. This ongoing review will consider the comments on this subject that are part of the public record for this and other rulemakings, as well as other methodological assumptions and issues. Consistent with DOE's legal obligations, and taking into account the uncertainty involved with this particular issue, DOE has included in this rule the most recent values resulting from the interagency review process. DOE notes, however, that the adopted standards would be economically justified even without inclusion of monetized benefits of reduced GHG emissions.

DOE also estimated the monetary value of the economic benefits associated with NO_X emissions reductions anticipated to result from the considered TSLs for UPSs. The dollar-per-ton values that DOE used are discussed in section IV.L of this document. Table V–25 presents the present values for NO_X emissions reductions for each TSL calculated using 7-percent and 3-percent discount rates. This table presents results that use the low dollar-per-ton values, which reflect DOE's primary estimate.

TABLE V–25 PRESENT VALUE OF NO_X EMISSIONS REDUCTION FOR UPSS SHIPPED IN 2019–2048 *

TSL	SC-CO_2 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	122	55		
2	152	69		
3	170	78		
4	386	174		

* Results are based on the low benefit-per-ton values.

7. Other Factors

The Secretary of Energy, in determining whether a standard is economically justified, may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII)) No other factors were considered in this analysis.

8. Summary of National Economic Impacts

Table V–26 presents the NPV values that result from adding the estimates of the potential economic benefits resulting from reduced CO_2 and NO_X emissions to the NPV of consumer savings calculated for each TSL considered in this rulemaking.

TABLE V–26—CONSUMER NPV COMBINED WITH PRESENT VALUE OF BENEFITS FROM CO_2 AND NO_X EMISSIONS REDUCTIONS

TSL	Consumer NPV and low NO_X values at 3% discount rate added with:			
	CO_2 5% discount rate, average case	CO_2 3% discount rate, average case	CO_2 2.5% discount rate, average case	CO_2 3% discount rate, 95th percentile case
	(billion 2015$)			
1	3.5	4.8	5.7	8.1
2	3.2	4.8	5.9	9.0
3	1.4	3.2	4.5	7.9
4	−52	−48	−45	−37
TSL	Consumer NPV and low NO_X values at 7% discount rate added with:			
	CO_2 5% discount rate, average case	CO_2 3% discount rate, average case	CO_2 2.5% discount rate, average case	CO_2 3% discount rate, 95th percentile case
	(billion 2015$)			
1	1.8	3.1	4.0	6.4
2	1.6	3.2	4.4	7.4
3	0.63	2.4	3.7	7.1
4	−29	−25	−22	−14

The national operating cost savings are domestic U.S. monetary savings that occur as a result of purchasing the covered UPSs, and are measured for the lifetime of products shipped in 2019–2048. The benefits associated with reduced CO_2 emissions achieved as a result of the adopted standards are also calculated based on the lifetime of UPSs shipped in 2019–2048. However, the CO_2 reduction is a benefit that accrues globally. Because CO_2 emissions have a very long residence time in the atmosphere, the SC-CO_2 values for future emissions reflect climate-related impacts that continue through 2300.

C. Conclusion

When considering new or amended energy conservation standards, the standards that DOE adopts for any type (or class) of covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering the seven statutory factors discussed previously. (42 U.S.C. 6295(o)(2)(B)(i)) The new or amended standard must also result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

For this final rule, DOE considered the impacts of new standards for UPSs at each TSL, beginning with the maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest efficiency level that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader as DOE discusses the benefits and/or burdens of each TSL, tables in this section present a summary of the results of DOE's quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers who may be disproportionately affected by a national standard and impacts on employment.

DOE also notes that the economics literature provides a wide-ranging discussion of how consumers trade off upfront costs and energy savings in the absence of government intervention. Much of this literature attempts to explain why consumers appear to undervalue energy efficiency improvements. There is evidence that consumers undervalue future energy savings as a result of (1) a lack of information; (2) a lack of sufficient salience of the long-term or aggregate benefits; (3) a lack of sufficient savings to warrant delaying or altering purchases; (4) excessive focus on the short term, in the form of inconsistent weighting of future energy cost savings relative to available returns on other investments; (5) computational or other difficulties associated with the evaluation of relevant tradeoffs; and (6) a divergence in incentives (for example, between renters and owners, or builders and purchasers). Having less than perfect foresight and a high degree of uncertainty about the future, consumers may trade off these types of investments at a higher than expected rate between current consumption and uncertain future energy cost savings.

In DOE's current regulatory analysis, potential changes in the benefits and costs of a regulation due to changes in consumer purchase decisions are included in two ways. First, if consumers forego the purchase of a product in the standards case, this decreases sales for product manufacturers, and the impact on manufacturers attributed to lost revenue is included in the MIA. Second, DOE accounts for energy savings attributable only to products actually used by consumers in the standards case; if a standard decreases the number of products purchased by consumers, this decreases the potential energy savings from an energy conservation standard. DOE provides estimates of shipments

and changes in the volume of product purchases in chapter 9 of the final rule TSD. However, DOE's current analysis does not explicitly control for heterogeneity in consumer preferences, preferences across subcategories of products or specific features, or consumer price sensitivity variation according to household income.[71]

While DOE is not prepared at present to provide a fuller quantifiable framework for estimating the benefits and costs of changes in consumer purchase decisions due to an energy conservation standard, DOE is committed to developing a framework that can support empirical quantitative tools for improved assessment of the consumer welfare impacts of appliance standards. DOE has posted a paper that discusses the issue of consumer welfare impacts of appliance energy conservation standards, and potential enhancements to the methodology by which these impacts are defined and estimated in the regulatory process.[72] DOE welcomes comments on how to more fully assess the potential impact of energy conservation standards on consumer choice and how to quantify this impact in its regulatory analysis in future rulemakings.

1. Benefits and Burdens of TSLs Considered for UPSs Standards

Table V–27 and Table V–28 summarize the quantitative impacts estimated for each TSL for UPSs. The national impacts are measured over the lifetime of UPSs purchased in the 30-year period that begins in the anticipated year of compliance with amended standards (2019–2048). The energy savings, emissions reductions, and value of emissions reductions refer to full-fuel-cycle results. The efficiency levels contained in each TSL are described in section V.A of this final rule.

TABLE V–27—SUMMARY OF ANALYTICAL RESULTS FOR UPSS TSLS: NATIONAL IMPACTS

Category	TSL 1	TSL 2	TSL 3	TSL 4
Cumulative FFC National Energy Savings (quads)				
quads	0.94	1.2	1.3	3.0.
NPV of Consumer Costs and Benefits (billion 2015$)				
3% discount rate	3.0	2.5	0.75	−53.
7% discount rate	1.3	1.0	0.03	−30.
Cumulative FFC Emissions Reduction				
CO_2 (*million metric tons*)	49	61	68	156.
SO_2 (*thousand tons*)	39	49	54	126.
NO_X (*thousand tons*)	63	78	87	201.
Hg (*tons*)	0.13	0.16	0.18	0.41.
CH_4 (*thousand tons*)	238	296	329	765.
N_2O (*thousand tons*)	0.73	0.91	1.0	2.3.
Value of Emissions Reduction				
CO_2 (*billion 2015$*) **	0.375 to 5.050	0.467 to 6.286	0.521 to 7.003	1.189 to 16.080.
NO_X—3% discount rate (*million 2015$*)	122	152	170	386.
NO_X—7% discount rate (*million 2015$*)	55	69	78	174.

Parentheses indicate negative (−) values.
* CO_2eq is the quantity of CO_2 that would have the same global warming potential (GWP).
** Range of the economic value of CO_2 reductions is based on estimates of the global benefit of reduced CO_2 emissions.

TABLE V–28—SUMMARY OF ANALYTICAL RESULTS FOR UPS TSLS: MANUFACTURER AND CONSUMER IMPACTS

Category	TSL 1 *	TSL 2 *	TSL 3 *	TSL 4 *
Manufacturer Impacts				
Industry NPV (million 2015$) (No-standards case INPV = 2,575)	2,167 − 2,737	1,939 − 2,832	1,599 − 2,964	(691) − 7,376.
Industry NPV (% change)	(15.9) − 6.3	(24.7) − 10.0	(37.9) − 15.1	(126.8) − 186.4.
Consumer Average LCC Savings (2015$)				
10a (VFD UPSs)	32	32	(4)	(12).
10b (VI UPSs)	12	4	4	(396).
10c (VFI UPSs)	36	36	36	(388).
Shipment-Weighted Average *	25	21	3	(205).
Consumer Simple PBP (years)				
10a (VFD UPSs)	0.0	0.0	2.6	3.8.
10b (VI UPSs)	3.7	4.6	4.6	36.
10c (VFI UPSs)	4.4	4.4	4.4	18.

[71] P.C. Reiss and M.W. White. Household Electricity Demand, Revisited. *Review of Economic Studies.* 2005. 72(3): pp. 853–883. doi: 10.1111/0034–6527.00354.

[72] Sanstad, A. H. *Notes on the Economics of Household Energy Consumption and Technology Choice.* 2010. Lawrence Berkeley National Laboratory. *https://www1.eere.energy.gov/buildings/appliance_standards/pdfs/consumer_ee_theory.pdf.*

TABLE V–28—SUMMARY OF ANALYTICAL RESULTS FOR UPS TSLS: MANUFACTURER AND CONSUMER IMPACTS—Continued

Category	TSL 1 *	TSL 2 *	TSL 3 *	TSL 4 *
Shipment-Weighted Average *	1.9	2.3	3.6	18.
Percent of Consumers that Experience a Net Cost				
10a (VFD UPSs)	0	0	51	80.
10b (VI UPSs)	9	50	50	100.
10c (VFI UPSs)	2	2	2	99.
Shipment-Weighted Average *	4	20	45	90.

Parentheses indicate negative (−) values.
* Weighted by shares of each product class in total projected shipments in 2019.

DOE first considered TSL 4, which represents the max-tech efficiency levels. TSL 4 would save an estimated 3.0 quads of energy, an amount DOE considers significant. Under TSL 4, the NPV of consumer benefit would be -$30 billion using a discount rate of 7 percent, and −$53 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 4 are 156 Mt of CO_2, 126 thousand tons of SO_2, 201 thousand tons of NO_X, 0.41 tons of Hg, 765 thousand tons of CH_4, and 2.3 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reduction at TSL 4 ranges from $1.2 billion to $16 billion. The estimated monetary value of the NO_X emissions reduction at TSL 4 is $174 million using a 7-percent discount rate and $386 million using a 3-percent discount rate.

At TSL 4, the average LCC impact is a savings of −$12 for VFD UPSs, −$396 for VI UPSs, and −$388 for VFI UPSs. The simple payback period is 3.8 years for VFD UPSs, 36 years for VI UPSs, and 18 years for VFI UPSs. The fraction of consumers experiencing a net LCC cost is 80 percent for VFD UPSs, 100 percent for VI UPSs, and 99 percent for VFIs.

At TSL 4, the projected change in INPV ranges from a decrease of $3,266 million to an increase of $4,801 million, which corresponds to a decrease of 126.8 percent to an increase of 186.4 percent.

The Secretary concludes that at TSL 4 for UPSs, the benefits of energy savings, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the negative NPV of consumer benefits, economic burden on some consumers, and the potentially significant reduction in INPV. Consequently, the Secretary has concluded that TSL 4 is not economically justified.

DOE then considered TSL 3, which would save an estimated 1.3 quads of energy, an amount DOE considers significant. Under TSL 3, the NPV of consumer benefit would be $0.03 billion using a discount rate of 7 percent, and $0.75 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 3 are 68 Mt of CO_2, 54 thousand tons of SO_2, 87 thousand tons of NO_X, 0.18 tons of Hg, 329 thousand tons of CH_4, and 1.0 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reduction at TSL 3 ranges from $0.52 billion to $7.0 billion. The estimated monetary value of the NO_X emissions reduction at TSL 3 is $78 million using a 7-percent discount rate and $170 million using a 3-percent discount rate.

At TSL 3, the average LCC impact is a savings of −$4 for VFD UPSs, $4 for VI UPSs, and $36 for VFI UPSs. The simple payback period is 2.6 years for VFD UPSs, 4.6 years for VI UPSs, and 4.4 years for VFI UPSs. The fraction of consumers experiencing a net LCC cost is 51 percent for VFD UPSs, 50 percent for VI UPSs, and 2 percent for VFIs.

At TSL 3, the projected change in INPV ranges from a decrease of $976 million to an increase of $389 million, which corresponds to a decrease of 37.9 percent to an increase of 15.1 percent.

The Secretary concludes that at TSL 3 for UPSs, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on some consumers, and the potential reduction in INPV. Consequently, the Secretary has concluded that TSL 3 is not economically justified.

DOE then considered TSL 2, which would save an estimated 1.2 quads of energy, an amount DOE considers significant. Under TSL 2, the NPV of consumer benefit would be $1.0 billion using a discount rate of 7 percent, and $2.5 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 2 are 61 Mt of CO_2, 49 thousand tons of SO_2, 78 thousand tons of NO_X, 0.16 tons of Hg, 296 thousand tons of CH_4, and 0.91 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reduction at TSL 2 ranges from $0.47 billion to $6.3 billion. The estimated monetary value of the NO_X emissions reduction at TSL 3 is $69 million using a 7-percent discount rate and $152 million using a 3-percent discount rate.

At TSL 2, the average LCC impact is a savings of $32 for VFD UPSs, $4 for VI UPSs, and $36 for VFI UPSs. The simple payback period is 0.0 [73] years for VFD UPSs, 4.6 years for VI UPSs, and 4.4 years for VFI UPSs. The fraction of consumers experiencing a net LCC cost is 0 percent for VFD UPSs, 50 percent for VI UPSs, and 2 percent for VFIs.

At TSL 2, the projected change in INPV ranges from a decrease of $636 million to an increase of $257 million, which corresponds to a decrease of 24.7 percent to an increase of 10.0 percent.

The Secretary concludes that at TSL 2 for UPSs, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on some consumers and the potential reduction in manufacturer INPV. Consequently, the Secretary has concluded that TSL 2 is not economically justified.

DOE then considered TSL 1, which would save an estimated 0.94 quads of energy, an amount DOE considers significant. Under TSL 1, the NPV of consumer benefit would be $1.3 billion using a discount rate of 7 percent, and $3.0 billion using a discount rate of 3 percent.

[73] The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

The cumulative emissions reductions at TSL 1 are 49 Mt of CO_2, 39 thousand tons of SO_2, 63 thousand tons of NO_X, 0.13 tons of Hg, 238 thousand tons of CH_4, and 0.73 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reduction at TSL 1 ranges from $0.37 billion to $5.0 billion. The estimated monetary value of the NO_X emissions reduction at TSL 1 is $55 million using a 7-percent discount rate and $122 million using a 3-percent discount rate.

At TSL 1, the average LCC impact is a savings of $32 for VFD UPSs, $12 for VI UPSs, and $36 for VFI UPSs. The simple payback period is 0.0[74] years for VFD UPSs, 3.7 years for VI UPSs, and 4.4 years for VFI UPSs. The fraction of consumers experiencing a net LCC cost is 0 percent for VFD UPSs, 9 percent for VI UPSs, and 2 percent for VFIs.

At TSL 1, the projected change in INPV ranges from a decrease of $409 million to an increase of $163 million, which corresponds to a decrease of 15.9 percent to an increase of 6.3 percent.

After considering the analysis and weighing the benefits and burdens, the Secretary has concluded that at TSL 1 for UPSs, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, the estimated monetary value of the emissions reductions, and positive average LCC savings would outweigh the negative impacts on some consumers and on manufacturers, including the conversion costs that could result in a reduction in INPV. Accordingly, the Secretary has concluded that TSL 1 would offer the maximum improvement in efficiency that is technologically feasible and economically justified, and would result in the significant conservation of energy.

Therefore, based on the above considerations, DOE adopts the energy conservation standards for UPSs at TSL 1. The adopted energy conservation standards for UPSs, which are expressed in average load adjusted efficiency, are shown in Table V–29.

TABLE V–29—ENERGY CONSERVATION STANDARDS FOR UPSS

UPS product class	Rated output power	Minimum efficiency
Voltage and Frequency Dependent	$0W < P_{rated} \leq 300\ W$	$-1.20E{-}06 * P_{rated}^2 + 7.17E{-}04 * P_{rated} + 0.862$.
	$300\ W < P_{rated} \leq 700\ W$	$-7.85E{-}08 * P_{rated}^2 + 1.01E{-}04 * P_{rated} + 0.946$.
	$P_{rated} > 700\ W$	$-7.23E{-}09 * P_{rated}^2 + 7.52E{-}06 * P_{rated} + 0.977$.
Voltage Independent	$0W < P_{rated} \leq 300\ W$	$-1.20E{-}06 * P_{rated}^2 + 7.19E{-}04 * P_{rated} + 0.863$.
	$300\ W < P_{rated} \leq 700\ W$	$-7.67E{-}08 * P_{rated}^2 + 1.05E{-}04 * P_{rated} + 0.947$.
	$P_{rated} > 700\ W$	$-4.62E{-}09 * P_{rated}^2 + 8.54E{-}06 * P_{rated} + 0.979$.
Voltage and Frequency Independent	$0W < P_{rated} \leq 300\ W$	$-3.13E{-}06 * P_{rated}^2 + 1.96E{-}03 * P_{rated} + 0.543$.
	$300\ W < P_{rated} \leq 700\ W$	$-2.60E{-}07 * P_{rated}^2 + 3.65E{-}04 * P_{rated} + 0.764$.
	$P_{rated} > 700\ W$	$-1.70E{-}08 * P_{rated}^2 + 3.85E{-}05 * P_{rated} + 0.876$.

2. Annualized Benefits and Costs of the Adopted Standards

The benefits and costs of the adopted standards can also be expressed in terms of annualized values. The annualized net benefit is (1) the annualized national economic value (expressed in 2015$) of the benefits from operating products that meet the adopted standards (consisting primarily of operating cost savings from using less energy), minus increases in product purchase costs, and (2) the annualized monetary value of the benefits of CO_2 and NO_X emission reductions.

Table V–30 shows the annualized values for UPSs under TSL 2, expressed in 2015$. The results under the primary estimate are as follows.

Using a 7-percent discount rate for benefits and costs other than CO_2 reductions (for which DOE used a 3-percent discount rate along with the average SC-CO_2 series corresponding to a value of $47.4/t in 2020 (2015$)), the estimated cost of the adopted standards for UPSs is $131 million per year in increased equipment costs, while the estimated benefits are $255 million per year in reduced equipment operating costs, $90 million per year in CO_2 reductions, and $5.1 million per year in reduced NO_X emissions. In this case, the net benefit would amount to $219 million per year.

Using a 3-percent discount rate for all benefits and costs and the average SC-CO_2 series corresponding to a value of $47.4/t in 2020 (2015$), the estimated cost of the adopted standards for UPSs is $140 million per year in increased equipment costs, while the estimated annual benefits are $301 million in reduced operating costs, $90 million in CO_2 reductions, and $6.6 million in reduced NO_X emissions. In this case, the net benefit would amount to $257 million per year.

TABLE V–30—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS (TSL 1) FOR UPSS

	Discount rate	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings	7%	255	231	284.
	3%	301	270	341.
CO_2 Reduction (using avg. SC-CO_2 at 5% discount rate)**	5%	27	24	30.
CO_2 Reduction (using avg. SC-CO_2 at 3% discount rate)**	3%	90	80	101.
CO_2 Reduction (using avg. SC-CO_2 at 2.5% discount rate)**	2.5%	131	116	148.

[74] The payback period is 0 due to the negative incremental cost at this efficiency level. More expensive and less efficient baseline units continue to exist in the market, likely because some consumers are familiar with their well-established performance. These consumers are reluctant to purchase newer, more efficient products that are just as reliable because they are unfamiliar with them. See section IV.C.3 for more details.

TABLE V–30—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS (TSL 1) FOR UPSS—Continued

	Discount rate	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
CO_2 Reduction (using 95th percentile SC-CO_2 at 3% discount rate)**.	3%	273	242	308.
NO_X Reduction †	7%	5.1	4.6	13.
	3%	6.6	5.9	17.
Total Benefits ‡	7% plus CO_2 range	287 to 533	260 to 478	327 to 606.
	7%	349	316	398.
	3% plus CO_2 range	335 to 581	300 to 519	388 to 666.
	3%	397	356	459.
Costs				
Consumer Incremental Product Costs	7%	131	118	145.
	3%	140	124	157.
Net Benefits				
Total ‡	7% plus CO_2 range	156 to 402	142 to 361	182 to 460.
	7%	219	198	253.
	3% plus CO_2 range	195 to 441	176 to 394	231 to 509.
	3%	257	231	302.

* This table presents the annualized costs and benefits associated with UPSs shipped in 2019–2048. These results include benefits to consumers which accrue after 2048 from the UPSs purchased from 2019–2048. The incremental installed costs include incremental equipment cost as well as installation costs. The results account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy prices from the *AEO 2016* No-CPP case, Low Economic Growth case, and High Economic Growth case, respectively. Shipment projections are also scaled based on the GDP index in the Low and High Economic Growth cases. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

** The CO_2 reduction benefits are calculated using four different sets of SC-CO_2 values. The first three use the average SC-CO_2 calculated using 5-percent, 3-percent, and 2.5-percent discount rates, respectively. The fourth represents the 95th percentile of the SC-CO_2 distribution calculated using a 3-percent discount rate. The SC-CO_2 values are emission year specific. See section IV.L.1 for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.2 for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the ACS study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average SC-CO_2 with 3-percent discount rate. In the rows labeled "7% plus CO_2 range" and "3% plus CO_2 range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of CO_2 values.

VI. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Section 1(b)(1) of Executive Order 12866, "Regulatory Planning and Review," 58 FR 51735 (Oct. 4, 1993), requires each agency to identify the problem that it intends to address, including, where applicable, the failures of private markets or public institutions that warrant new agency action, as well as to assess the significance of that problem. The problems that the adopted standards for UPSs are intended to address are as follows:

(1) Insufficient information and the high costs of gathering and analyzing relevant information leads some consumers to miss opportunities to make cost-effective investments in energy efficiency.

(2) In some cases the benefits of more efficient equipment are not realized due to misaligned incentives between purchasers and users. An example of such a case is when the equipment purchase decision is made by a building contractor or building owner who does not pay the energy costs.

(3) There are external benefits resulting from improved energy efficiency of products or equipment that are not captured by the users of such equipment. These benefits include externalities related to public health, environmental protection and national energy security that are not reflected in energy prices, such as reduced emissions of air pollutants and greenhouse gases that impact human health and global warming. DOE attempts to qualify some of the external benefits through use of social cost of carbon values.

The Administrator of the Office of Information and Regulatory Affairs (OIRA) in the OMB has determined that the regulatory action in this document is a significant regulatory action under section (3)(f) of Executive Order 12866. Accordingly, pursuant to section 6(a)(3)(B) of the Order, DOE has provided to OIRA: (i) The text of the draft regulatory action, together with a reasonably detailed description of the need for the regulatory action and an explanation of how the regulatory action will meet that need; and (ii) an assessment of the potential costs and benefits of the regulatory action, including an explanation of the manner in which the regulatory action is consistent with a statutory mandate. DOE has included these documents in the rulemaking record.

In addition, the Administrator of OIRA has determined that the regulatory

action is an ''economically'' significant regulatory action under section (3)(f)(1) of Executive Order 12866. Accordingly, pursuant to section 6(a)(3)(C) of the Order, DOE has provided to OIRA an assessment, including the underlying analysis, of benefits and costs anticipated from the regulatory action, together with, to the extent feasible, a quantification of those costs; and an assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, and an explanation why the planned regulatory action is preferable to the identified potential alternatives. These assessments can be found in the technical support document for this rulemaking.

DOE has also reviewed this regulation pursuant to Executive Order 13563, issued on January 18, 2011. 76 FR 3281, Jan. 21, 2011. E.O. 13563 is supplemental to and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in Executive Order 12866. To the extent permitted by law, agencies are required by Executive Order 13563 to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

DOE emphasizes as well that Executive Order 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, DOE believes that this final rule is consistent with these principles, including the requirement that, to the extent permitted by law, benefits justify costs.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of a final regulatory flexibility analysis (FRFA) for any final rule where the agency was first required by law to publish a proposed rule for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (Aug. 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website (*http://energy.gov/gc/office-general-counsel*). DOE certified in the August 2016 NOPR that the adopted standards will not have a significant economic impact on a substantial number of small entities, and the preparation of an FRFA is not warranted. The factual basis for this certification is discussed in the following section.

For manufacturers of UPSs, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. See 13 CFR part 121. The size standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at *https://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf.*

UPS manufacturing is classified under NAICS 335999, ''All Other Miscellaneous Electrical Equipment and Component Manufacturing.'' The SBA sets a threshold of 500 employees or less for an entity to be considered as a small business manufacturer of those product classes.

To estimate the number of companies that could be small businesses that manufacture UPSs covered by this rulemaking, DOE conducted a market survey using publicly available information. DOE first attempted to identify all potential UPS manufacturers by researching certification databases (*e.g.,* EPA's ENERGY STAR [75]), retailer websites, individual company websites, and the SBA's database. DOE then attempted to gather information on the location and number of employees to determine if these companies met SBA's definition of a small business for each potential UPS manufacturer by reaching out directly to those potential small businesses and using market research tools (*i.e.,* Hoover's reports), and company profiles on public websites (*i.e.,* Manta, Glassdoor, and Linkedin). DOE also asked stakeholders and industry representatives if they were aware of any small businesses during manufacturer interviews. DOE used information from these sources to create a list of companies that potentially manufacture UPSs and would be impacted by this rulemaking. DOE screened out companies that do not offer products affected by this final rule, do not meet the definition of a ''small business,'' are completely foreign owned and operated, or do not manufacture UPSs in the United States.

DOE initially identified a total of 48 potential companies that sell UPSs in the United States. Of these, DOE estimated that 12 were small businesses in the August 2016 NOPR. After reviewing publicly available information, such as Hoovers [76] and individual company websites for these potential small UPS businesses, DOE determined that none of these companies manufacture UPSs in the United States and therefore are not directly impacted by this rulemaking. All 12 small businesses that sell, but do not manufacturer UPSs in the United States, also sell products outside the scope of this rulemaking. Additionally, DOE estimates that 10 of the 12 small businesses selling UPSs receive the majority of their revenue from products not covered by this rulemaking. Subsequently, DOE does not believe this regulation will put small businesses in the U.S. that purchase UPSs from foreign manufacturers at a competitive disadvantage in the marketplace. These small UPS companies are not responsible for the conversion costs to comply with standards because the companies do not own the manufacturing facilities and tooling used to produce UPSs. DOE believes that these small UPS businesses may be able to pass through the majority of the incremental MPCs of these more

[75] ENERGY STAR. Energy Star Certified Products. Last accessed May 4, 2015. *http://www.energystar.gov/.*

[76] *http://www.hoovers.com/.*

efficient UPSs to their customers. It is also possible that small businesses purchasing compliant UPSs may see an increase in costs as a result of the rule. See section IV.J.2.d for further discussion on the manufacturer markup scenarios modeled for this rulemaking and their impacts on manufacturer profitability.

Schneider commented that compliance with adopted UPS standards would make it difficult for new manufacturers, especially smaller manufacturers, to enter the UPS market (Schneider Electric, No. 0017 at p. 21). The UPS industry, as covered by the scope of this rulemaking, presents barriers to entry for any new market participant, large or small. In addition to the high startup cost of producing cost-competitive UPSs, the large number of existing UPS manufacturers limits opportunities for new market entrants to gain market share. As a result, DOE does not believe that it would be more or less feasible to enter the UPS market, due to this rulemaking.

Based on DOE's determination that there are no domestic small UPS manufacturers, that companies making UPSs sourced from foreign components would not be responsible for the conversion costs, and that companies making UPSs would be able to pass on the potential increases in MPCs associated with adopted UPS standards, DOE previously certified in the August 2016 NOPR that the adopted standards will not have a significant economic impact on a substantial number of small entities. The factual basis for this certification has not changed.

C. Review Under the Paperwork Reduction Act

Manufacturers of UPSs must certify to DOE that their products comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their products according to the DOE test procedures for UPSs, including any amendments adopted for that test procedure. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including UPSs. 76 FR 12422 (March 7, 2011); 80 FR 5099 (Jan. 30, 2015). The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 30 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

Pursuant to the National Environmental Policy Act (NEPA) of 1969, DOE has determined that the rule fits within the category of actions included in Categorical Exclusion (CX) B5.1 and otherwise meets the requirements for application of a CX. (See 10 CFR part 1021, App. B, B5.1(b); 1021.410(b) and App. B, B(1)–(5).) The rule fits within this category of actions because it is a rulemaking that establishes energy conservation standards for consumer products or industrial equipment, and for which none of the exceptions identified in CX B5.1(b) apply. Therefore, DOE has made a CX determination for this rulemaking, and DOE does not need to prepare an Environmental Assessment or Environmental Impact Statement for this rule. DOE's CX determination for this rule is available at *http://energy.gov/nepa/categorical-exclusion-cx-determinations-cx.*

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (Aug. 10, 1999), imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297) Therefore, no further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. 61 FR 4729 (Feb. 7, 1996). Regarding the review required by section 3(a), section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in

the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at *http://energy.gov/sites/prod/files/gcprod/documents/umra_97.pdf.*

DOE has concluded that this final rule may require expenditures of $100 million or more in any one year by the private sector. Such expenditures may include (1) investment in research and development and in capital expenditures by UPSs manufacturers in the years between the final rule and the compliance date for the new standards and (2) incremental additional expenditures by consumers to purchase higher-efficiency UPSs, starting at the compliance date for the applicable standard.

Section 202 of UMRA authorizes a Federal agency to respond to the content requirements of UMRA in any other statement or analysis that accompanies the final rule. (2 U.S.C. 1532(c)) The content requirements of section 202(b) of UMRA relevant to a private sector mandate substantially overlap the economic analysis requirements that apply under section 325(o) of EPCA and Executive Order 12866. The **SUPPLEMENTARY INFORMATION** section of this document and the TSD for this final rule respond to those requirements.

Under section 205 of UMRA, the Department is obligated to identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a written statement under section 202 is required. (2 U.S.C. 1535(a)) DOE is required to select from those alternatives the most cost-effective and least burdensome alternative that achieves the objectives of the rule unless DOE publishes an explanation for doing otherwise, or the selection of such an alternative is inconsistent with law. As required by 42 U.S.C. 6295(m), this final rule establishes new energy conservation standards for UPSs that are designed to achieve the maximum improvement in energy efficiency that DOE has determined to be both technologically feasible and economically justified, as required by 42 U.S.C. 6295(o)(2)(A) and 42 U.S.C. 6295(o)(3)(B). A full discussion of the alternatives considered by DOE is presented in chapter 17 of the TSD for this final rule.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

Pursuant to Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 18, 1988), DOE has determined that this rule would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under information quality guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA at OMB, a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgates or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy, or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

DOE has concluded that this regulatory action, which sets forth new energy conservation standards for UPSs, is not a significant energy action because the standards are not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on this final rule.

L. Review Under the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (OSTP), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are ''influential scientific information,'' which the Bulletin defines as ''scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions.'' *Id.* at 70 FR 2667.

In response to OMB's Bulletin, DOE conducted formal peer reviews of the energy conservation standards development process and the analyses that are typically used and prepared a report describing that peer review.[77] Generation of this report involved a rigorous, formal, and documented

[77] The 2007 ''Energy Conservation Standards Rulemaking Peer Review Report'' is available at the following website: *http://energy.gov/eere/buildings/downloads/energy-conservation-standards-rulemaking-peer-review-report-0.*

evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule prior to its effective date. The report will state that it has been determined that the rule is a ''major rule'' as defined by 5 U.S.C. 804(2).

VII. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects in 10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, and Small businesses.

Issued in Washington, DC, on December 28, 2016.

David J. Friedman,

Acting Assistant Secretary, Energy Efficiency and Renewable Energy.

Note: DOE is publishing this document concerning uninterruptible power supplies to comply with an order from the U.S. District Court for the Northern District of California in the consolidated cases of *Natural Resources Defense Council, et al.* v. *Perry and People of the State of California et al.* v. *Perry*, Case No. 17–cv–03404–VC, as affirmed by the U.S. Court of Appeals for the Ninth Circuit in the consolidated cases Nos. 18–15380 and 18–15475. DOE reaffirmed the original signature and date in the Energy Conservation Standards implementation of the court order published elsewhere in this issue of the **Federal Register**. This document is substantively identical to the signed document. DOE had previously posted to its website but has been edited and formatted in conformance with the publication requirements for the **Federal Register** and CFR to ensure the document can be given legal effect.

Editorial Note: This document was received for publication by the Office of the Federal Register on December 3, 2019.

For the reasons set forth in the preamble, DOE amends part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 1. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 2. Section 430.32 is amended by adding paragraph (z)(3) to read as follows:

§ 430.32 Energy and water conservation standards and their compliance dates.

* * * * *

(z) * * *

(3) All uninterruptible power supplies (UPS) manufactured on and after January 10, 2022, that utilize a NEMA 1–15P or 5–15P input plug and have an AC output shall have an average load adjusted efficiency that meets or exceeds the values shown in the table in this paragraph (z)(3) based on the rated output power (P_{rated}) of the UPS.

Battery charger product class	Rated output power	Minimum efficiency
10a (VFD UPSs)	$0W < P_{rated} \leq 300\ W$	$-1.20E{-}06 * P^2_{rated} + 7.17E{-}04 * P_{rated} + 0.862$.
	$300\ W < P_{rated} \leq 700\ W$	$-7.85E{-}08 * P^2_{rated} + 1.01E{-}04 * P_{rated} + 0.946$.
	$P_{rated} > 700\ W$	$-7.23E{-}09 * P^2_{rated} + 7.52E{-}06 * P_{rated} + 0.977$.
10b (VI UPSs)	$0W\ P_{rated} \leq 300\ W$	$-1.20E{-}06 * P^2_{rated} + 7.19E{-}04 * P_{rated} + 0.863$.
	$300\ W < P_{rated} \leq 700\ W$	$-7.67E{-}08 * P^2_{rated} + 1.05E{-}04 * P_{rated} + 0.947$.
	$P_{rated} \leq 700\ W$	$-4.62E{-}09 * P^2_{rated} + 8.54E{-}06 * P_{rated} + 0.979$.
10c (VFI UPSs)	$0W < P_{rated} \leq 300\ W$	$-3.13E{-}06 * P^2_{rated} + 1.96E{-}03 * P_{rated} + 0.543$.
	$P_{rated} \leq 700\ W$	$-2.60E{-}07 * P_{2rated} + 3.65E{-}04 * P_{rated} + 0.764$.
	$P_{rated} \leq 700\ W$	$-1.70E{-}08 * P^2_{rated} + 3.85E{-}05 * P_{rated} + 0.876$.

* * * * *

Note: The following letter will not appear in the Code of Federal Regulations.

U.S. Department of Justice
Antitrust Division

Renata B. Hesse,

Acting Assistant Attorney General.

Main Justice Building, 950 Pennsylvania Avenue NW, Washington, DC 20530–0001, (202) 514–2401/(202) 616–2645 (Fax)

October 13, 2016

Anne Harkavy,

Deputy General Counsel for Litigation, Regulation and Enforcement.

1000 Independence Ave. SW, U.S. Department of Energy, Washington, DC 20585

Re: *Doc. No. EERE–2016–BT–STD–0022*

Dear Deputy General Counsel Harkavy:

I am responding to your August 8, 2016, letter seeking the views of the Attorney General about the potential impact on competition of proposed energy conservation standards for uninterruptible power supplies.

Your request was submitted under Section 325(o)(2)(B)(i)(V) of the Energy Policy and Conservation Act, as amended (ECPA), 42 U.S.C. 6295(o)(2)(B)(i)(V), which requires the Attorney General to make a determination of the impact of any lessening of competition that is likely to result from the imposition of proposed energy conservation standards. The Attorney General's responsibility for responding to requests from other departments about the effect of a program on competition has been delegated to the Assistant Attorney General for the Antitrust Division in 28 CFR 0.40(g).

In conducting its analysis, the Antitrust Division examines whether a proposed standard may lessen competition, for example, by substantially limiting consumer choice or increasing industry concentration. A lessening of competition could result in higher prices to manufacturers and consumers.

We have reviewed the proposed standards contained in the Notice of Proposed Rulemaking (81 FR 52196, Aug. 5, 2016) and the related Technical Support Documents. We also monitored the public meeting held on the proposed standards on September 16, 2016, reviewed supplementary information submitted to the Attorney General by the Department of Energy and public comments submitted in connection with this proceeding, and conducted interviews with industry representatives.

Based on the information currently available, we do not believe that the proposed energy conservation standards for uninterruptible power supplies are likely to have a significant adverse effect on competition. This conclusion is subject to some uncertainty, however, in part because manufacturers of uninterruptible power supplies have indicated that a large number of current products will not be able to immediately comply with the new standards and thus will likely be removed from the market. Nonetheless, we currently have no reason to believe that this will result in any particular manufacturer either exiting the market or gaining or increasing its market power and thereby harming competition.

Sincerely,

Renata B. Hesse,

Acting Assistant Attorney General.

[FR Doc. 2019–26354 Filed 1–9–20; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 431

[Docket Number EERE–2013–BT–STD–0040]

RIN 1904–AC83

Energy Conservation Program: Energy Conservation Standards for Air Compressors

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: The Energy Policy and Conservation Act of 1975, as amended (''EPCA''), prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment. EPCA also authorizes DOE to establish standards for certain other types of industrial equipment, including air compressors. Such standards must be technologically feasible and economically justified, and must save a significant amount of energy. In this final rule, DOE is adopting new energy conservation standards for air compressors. It has determined that the adopted energy conservation standards for these products would result in significant conservation of energy, and are technologically feasible and economically justified.

DATES: The effective date of this rule is March 10, 2020. Compliance with the new standards established for compressors in this final rule is required on and after January 10, 2025.

ADDRESSES: The docket for this rulemaking, which includes **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at: *www.regulations.gov/docket?D=EERE-2013-BT-STD-0040.* The docket web page contains simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 586–6636 or by email: *ApplianceStandardsQuestions@ee.doe.gov.*

FOR FURTHER INFORMATION CONTACT:

James Raba, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–8654. Email: *ApplianceStandardsQuestions@ee.doe.gov.*

Mary Greene, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–1817. Email: *Mary.Greene@hq.doe.gov.*

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I. Synopsis of the Final Rule

Title III of the Energy Policy and Conservation Act of 1975, as amended (''EPCA'' or, in context, ''the Act''), sets forth a variety of provisions designed to improve energy efficiency. (42 U.S.C. 6291, *et seq.*) Part C of Title III, which for editorial reasons was re-designated as Part A–1 upon incorporation into the U.S. Code (42 U.S.C. 6311–6317), establishes the ''Energy Conservation Program for Certain Industrial Equipment.'' EPCA provides that DOE may include a type of industrial equipment as covered equipment if it determines that to do so is necessary to carry out the purposes of Part A–1. (42 U.S.C. 6312(b)). EPCA authorizes DOE to prescribe energy conservation standards for those types of industrial equipment which the Secretary classifies as covered equipment. (42 U.S.C. 6314) On November 15, 2016, DOE published a final rule, which determined coverage for compressors is necessary to carry out the purposes of Part A–1 of Title III of EPCA (herein referred to as ''notice of final determination''). 81 FR 79991

Pursuant to EPCA, any new or amended energy conservation standard must be designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A) and 42 U.S.C. 6316(a)) Furthermore, the new or amended standard must result in a significant conservation of energy. (42 U.S.C. 6295(o)(3)(B) and 42 U.S.C. 6316(a))

In accordance with these and other statutory provisions discussed in this document, DOE is adopting new energy conservation standards for compressors. The adopted standards, which are expressed in package isentropic efficiency (*i.e.,* the ratio of the theoretical isentropic power required for a compression process to the actual power required for the same process), are shown in Table I.1. These standards apply to all compressors listed in Table I.1 and manufactured in, or imported into, the United States starting on January 10, 2025.

In Table I.1, the term V_1 denotes the full-load actual volume flow rate of the compressor, in cubic feet per minute (''cfm''). *Standard* levels are expressed as a function of full-load actual volume flow rate for each equipment class, and may be calculated by inserting values from the rightmost two columns into the second leftmost column. Doing so yields an efficiency-denominated function of full-load actual volume flow rate.

TABLE I.1—ADOPTED ENERGY CONSERVATION STANDARDS FOR AIR COMPRESSORS

Equipment class	Standard level (package isentropic efficiency)	η_{Regr} (package isentropic efficiency reference curve)	d (percentage loss reduction)
Rotary, lubricated, air-cooled, fixed-speed.	$\eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.00928 * \ln^2(.4719 * V_1) + 0.13911 * \ln(.4719 * V_1) + 0.27110$.	−15
Rotary, lubricated, air-cooled, variable-speed.	$\eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.01549 * \ln^2(.4719 * V_1) + 0.21573 * \ln(.4719 * V_1) + 0.00905$.	−10
Rotary, lubricated, liquid-cooled, fixed-speed.	$.02349 + \eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.00928 * \ln^2(.4719 * V_1) + 0.13911 * \ln(.4719 * V_1) + 0.27110$.	−15
Rotary, lubricated, liquid-cooled, variable-speed.	$.02349 + \eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.01549 * \ln^2(.4719 * V_1) + 0.21573 * \ln(.4719 * V_1) + 0.00905$.	−15

A. Benefits and Costs to Consumers

Table I.2 presents DOE's evaluation of the economic impacts of the proposed standards on consumers of air compressors, as measured by the average life-cycle cost (''LCC'') savings and the simple payback period (''PBP'').[1] The average LCC savings are positive for all equipment classes for which standards are being adopted, and the PBP is less than the average lifetime of air compressors; that lifetime is estimated to be approximately 13 years for the covered equipment classes.

[1] The average LCC savings are measured relative to the no-new standards case efficiency distribution in the no-new-standards case, which depicts the market in the compliance year in the absence of standards (see section IV.F.9). The simple PBP, which is designed to compare specific efficiency levels, is measured relative to the baseline model (see section IV.C.1.a).

TABLE I.2—IMPACTS OF ADOPTED ENERGY CONSERVATION STANDARDS ON CONSUMERS OF AIR COMPRESSORS

Equipment class	Average LCC savings (2015$)	Simple payback period (years)
Rotary positive, fixed speed, lubricated, air cooled (RP_FS_L_AC)	8,002	2.4
Rotary positive, fixed speed, lubricated, liquid cooled (RP_FS_L_WC)	10,559	2.7
Rotary positive, variable speed, lubricated, air cooled (RP_VS_L_AC)	2,618	4.9
Rotary positive, variable speed, lubricated, liquid cooled (RP_VS_L_WC)	5,145	4.9

DOE's analysis of the impacts of the adopted standards on consumers is described in section IV.F of this document.

B. Impact on Manufacturers

The industry net present value (''INPV'') is the sum of the discounted cash flows to the industry from the base year through the end of the analysis period (2016–2051). Using a real discount rate of 8.7 [2] percent, DOE estimates that the (INPV) for manufacturers of air compressors in the case without new standards is $409.7 million in 2015$. Under the adopted standards, DOE expects the change in INPV to range from −13.5 percent to −10.2 percent, which is approximately −$55.1 million to −$42.0 million. In order to bring products into compliance with adopted standards, DOE expects the industry to incur total conversion costs ranging from a high of $121.3 million to $98.1 million.[3]

DOE's analysis of the impacts of the adopted standards on manufacturers is described in section IV.J and section V.B.2 of this document.

C. National Benefits and Costs [4]

DOE's analyses indicate that the adopted energy conservation standards for air compressors would save a significant amount of energy. Relative to the case without new standards (no new standards case), the lifetime energy savings for air compressors purchased in the 30-year period that begins in the anticipated first full year of compliance with the adopted standards (2022–2051) [5] amount to 0.16 quadrillion British thermal units (''Btu''), or quads.[6] This represents a savings of 0.6 percent relative to the energy use of these products in the no new standards case A.

The cumulative net present value (''NPV'') of total consumer costs and savings of the standards for air compressors ranges from $0.2 billion (at a 7-percent discount rate) to $0.4 billion (at a 3-percent discount rate). This NPV expresses the estimated total value of future operating-cost savings minus the estimated increased equipment costs for air compressors purchased in 2022–2051.

In addition, the adopted standards for compressors are projected to yield significant environmental benefits. DOE estimates that the standards will result in cumulative emission reductions (over the same period as for energy savings) of 8.2 million metric tons (''Mt'') [7] of carbon dioxide (CO_2), 6.5 thousand tons of sulfur dioxide (SO_2), 11.0 tons of nitrogen oxides (NO_X), 40.8 thousand tons of methane (CH_4), 0.1 thousand tons of nitrous oxide (N_2O), and 0.02 ton of mercury (Hg).[8] The estimated cumulative reduction in CO_2 emissions through 2030 amounts to 0.9 Mt, which is equivalent to the emissions resulting from the annual electricity use of more than 95 thousand homes.

The value of the CO_2 reduction is calculated using a range of values per metric ton (''t'') of CO_2 (otherwise known as the ''social cost of CO_2,'' or ''SC-CO_2'') developed by a Federal interagency working group.[9] The derivation of the SC-CO_2 values is discussed in section IV.L.1 of this document. Using discount rates appropriate for each set of SC-CO_2 values, DOE estimates that the present value of the CO_2 emissions reduction is between $0.05 billion and $0.76 billion, with a value of $0.25 billion using the central SC-CO_2 case represented by $47.4/metric ton (t) in 2020.

DOE also calculated the value of the reduction in emissions of the non-CO_2 greenhouse gases, methane and nitrous oxide, using values for the social cost of methane (''SC-CH_4'') and the social cost of nitrous oxide (''SC-N_2O'') recently developed by the interagency working group.[10] See section IV.L.2 for description of the methodology and the values used for DOE's analysis. The estimated present value of the methane emissions reduction is between $0.01 billion and $0.11 billion, with a value of $0.04 billion using the central SC-CH_4 case represented by $1,353/t in 2020; and the estimated present value of the N_2O emissions reduction is between $0.000 billion and $0.003 billion, with a value of $0.001 billion using the central SC-N_2O case, represented by $16,916/t.

DOE also estimates the present value of the NO_X emissions reduction to be $6.1 million using a 7-percent discount

[2] DOE estimated preliminary financial metrics, including the industry discount rate, based on publicly available financial information, including Securities and Exchange Commission (''SEC'') filings and S&P bond ratings. DOE presented the preliminary financial metrics to manufacturers in manufacturer impact analysis (''MIA'') interviews. DOE adjusted those values based on feedback from manufacturers. The complete set of financial metrics and more detail about the methodology can be found in chapter 12 of the final rule technical support document (''TSD'').

[3] For the MIA, DOE modeled two standards-case conversion cost scenarios to represent uncertainty regarding the potential impacts on manufacturers following the implementation of energy conservation standards. More details about the methodology can be found in section IV.J.2 of this document and in chapter 12 of the final rule TSD.

[4] All monetary values in this document are expressed in 2015 dollars and, where appropriate, are discounted to 2016 unless explicitly stated otherwise.

[5] The analysis uses January 1st, 2022, to represent the expected compliance date in late 2021. Therefore, the 30-year analysis period is referred to as 2022–2051 in this document.

[6] The quantity refers to full-fuel-cycle (''FFC'') energy savings. FFC energy savings includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and, thus, presents a more complete picture of the impacts of energy efficiency standards. For more information on the FFC metric, see section IV.H.

[7] A metric ton is equivalent to 1.1 short tons. Results for emissions other than CO_2 are presented in short tons.

[8] DOE calculated emissions reductions relative to the no-new-standards-case, which reflects key assumptions in the *Annual Energy Outlook 2016* (*AEO 2016*). *AEO 2016* represents current federal and state legislation and final implementation of regulations as of the end of February 2016. DOE is using the projection consistent with the cases described on page E–8 of *AEO 2016.*

[9] United States Government—Interagency Working Group on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* May 2013. Revised July 2015. *www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

[10] United States Government–Interagency Working Group on Social Cost of Greenhouse Gases. Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide. August 2016. *www.whitehouse.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf.*

rate, and $16.8 million using a 3-percent discount rate.[11] DOE is still investigating appropriate valuation of the reduction in other emissions, and therefore did not include any such values in the analysis for this final rule.

Table I.3 summarizes the economic benefits and costs expected to result from the adopted standards for air compressors.

TABLE I.3—SUMMARY OF ECONOMIC BENEFITS AND COSTS OF ADOPTED ENERGY CONSERVATION STANDARDS FOR AIR COMPRESSORS *

Category	Present value (billion 2015$)	Discount rate (percent)
Benefits		
Consumer Operating Cost Savings	0.2	7
	0.6	3
GHG Reduction (using avg. social costs at 5% discount rate) **	0.1	5
GHG Reduction (using avg. social costs at 3% discount rate) **	0.3	3
GHG Reduction (using avg. social costs at 2.5% discount rate) **	0.5	2.5
GHG Reduction (using 95th percentile social costs at 3% discount rate) **	0.9	3
NO_X Reduction †	0.006	7
	0.02	3
Total Benefits ‡	0.5	7
	0.9	3
Costs		
Consumer Incremental Installed Costs ‡	0.1	7
	0.2	3
Total Net Benefits		
Including GHG and NO_X Reduction Monetized Value ††	0.5	7
	0.8	3

* This table presents the costs and benefits associated with compressors shipped in 2022–2051. These results include benefits to consumers that accrue after 2022 from the products shipped in 2022–2051.

** The interagency group selected four sets of SC-CO_2 SC-CH_4, and SC-N_2O values for use in regulatory analyses. Three sets of values are based on the average social costs from the integrated assessment models, at discount rates of 5-percent, 3-percent, and 2.5-percent. The fourth set, which represents the 95th percentile of the social cost distributions calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the social cost distributions. The social cost values are emission year specific. The GHG reduction benefits are global benefits due to actions that occur domestically. See section IV.L for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.)* See section IV.L.3 for further discussion. To be conservative, DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the Electricity Generating Unit sector based on the low-end estimates of premature mortality used by EPA. If the benefit-per-ton estimates were based on the high-end estimates, the values would be nearly two-and-a-half times larger. If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.,* 2011), the values would be nearly two-and-a-half times larger.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average social costs with 3-percent discount rate.

†† The incremental installed costs include incremental equipment cost as well as installation costs. The costs account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule.

The benefits and costs of the adopted standards for air compressors sold in 2022–2051 can also be expressed in terms of annualized values. The monetary values for the total annualized net benefits are the sum of (1) the national economic value of the benefits in reduced consumer operating costs, minus (2) the increases in product purchase prices and installation costs, plus (3) the value of the benefits of CO_2 and NO_X emission reductions, all annualized.[12]

The national operating cost savings are domestic private U.S. consumer monetary savings that occur as a result of purchasing the covered products and are measured for the lifetime of compressors shipped in 2022–2051. The benefits associated with reduced CO_2 emissions achieved as a result of the adopted standards are also calculated based on the lifetime of compressors shipped in 2022–2051. Because CO_2 emissions have a very long residence time in the atmosphere, the SC-CO_2 values for CO_2 emissions in future years

[11] DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See section IV.L.3 for further discussion. *The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. Chamber of Commerce, et al.* v. *EPA, et al.,* Order in Pending Case, West Virginia v. EPA, 136 S. Ct. 1000, 194 L. Ed. 2d 17 (2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan. To be conservative, DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the Electricity Generating Unit sector based on the low-end estimates of premature mortality used by EPA. If the benefit-per-ton estimates were based on the high-end estimates, the values would be nearly two-and-a-half times larger. If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

[12] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2016, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (*e.g.,* 2020 or 2030), and then discounted the present value from each year to 2016. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates, as shown in Table I.3. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year, which yields the same present value.

reflect impacts that continue through 2300. The CO_2 reduction is a benefit that accrues globally. DOE maintains that consideration of global benefits is appropriate because of the global nature of the climate change problem.

Estimates of annualized benefits and costs of the adopted standards are shown in Table I.4. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than GHG reduction (for which DOE used average social costs with a 3-percent discount rate),[13] the estimated cost of the standards in this rule is $9.9 million per year in increased equipment costs, while the estimated annual benefits are $28.1 million in reduced equipment operating costs, $17.2 million in GHG reductions, and $0.7 million in reduced NO_X emissions. In this case, the net benefit amounts to $36 million per year. Using a 3-percent discount rate for all benefits and costs, the estimated cost of the standards is $10.4 million per year in increased equipment costs, while the estimated annual benefits are $36.8 million in reduced operating costs, $17.2 million in GHG reductions, and $1.0 million in reduced NO_X emissions. In this case, the net benefit amounts to $45 million per year.

TABLE I.4—ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS FOR COMPRESSORS *

	Discount rate (percent)	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings	7	28.1	24.8	35.1.
	3	36.8	32.2	46.6.
GHG Reduction (using avg. social costs at 5% discount rate) **	5	5.4	4.7	6.6.
GHG Reduction (using avg. social costs at 3% discount rate) **	3	17.2	14.8	21.2.
GHG Reduction (using avg. social costs at 2.5% discount rate) **	2.5	24.8	21.4	30.6.
GHG Reduction (using 95th percentile social costs at 3% discount rate) **	3	51.5	44.4	63.4.
NO_X Reduction †	7	0.7	0.6	1.9.
	3	1.0	0.9	2.8.
Total Benefits ‡	7 plus CO_2 range	34 to 80	30 to 70	44 to 100.
	7	46	40	58.
	3 plus CO_2 range	43 to 89	38 to 77	56 to 113.
	3	55	48	71.
Costs				
Consumer Incremental Equipment Costs ††	7	9.9	8.8	11.4.
	3	10.4	9.3	12.0.
Net Benefits				
Total ‡	7 plus CO_2 range	24 to 70	21 to 61	32 to 89.
	7	36	31	47.
	3 plus CO_2 range	33 to 79	28 to 68	44 to 101.
	3	45	39	59.

* This table presents the annualized costs and benefits associated with the considered compressors shipped in 2022–2051. These results include benefits to consumers which accrue after 2051 from the compressors purchased from 2022–2051. The incremental installed costs include incremental equipment cost as well as installation costs. The results account for the incremental variable and fixed costs incurred by manufacturers due to the adopted standards, some of which may be incurred in preparation for the rule. The GHG reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy prices from the *AEO 2016* Economic Growth cases. In addition, incremental product costs reflect constant prices in the Primary Estimate, a low decline rate in the Low Benefits Estimate, and a high decline rate in the High Benefits Estimate. The methods used to derive projected price trends are explained in section IV.F. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

** The interagency group selected four sets of SC-CO_2 SC-CH_4, and SC-N_2O values for use in regulatory analyses. Three sets of values are based on the average social costs from the integrated assessment models, at discount rates of 5 percent, 3 percent, and 2.5 percent. The fourth set, which represents the 95th percentile of the social cost distributions calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the social cost distributions. The social cost values are emission year specific. The GHG reduction benefits are global benefits due to actions that occur nationally. See section IV.L for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.)* See section IV.L.3 for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality used by EPA. For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the American Cancer Society (''ACS'') study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average social costs with 3-percent discount rate. In the rows labeled ''7% plus GHG range'' and ''3% plus GHG range,'' the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of social cost values.

†† The incremental installed costs include incremental equipment cost as well as installation costs. The results account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule.

DOE's analysis of the national impacts of the adopted standards is described in sections IV.H, IV.K, and IV.L of this document.

D. Conclusion

Based on the analyses culminating in this final rule, DOE finds the benefits of the standards (energy savings, consumer LCC savings, positive NPV of consumer benefit, and emission reductions) to the Nation outweigh the burdens (loss of INPV and LCC increases for some users of these products). DOE concludes that the standards in this final rule represent the maximum improvement in energy efficiency that is technologically feasible and economically justified, and will result in significant conservation of energy.

II. Introduction

The following section briefly discusses the statutory authority underlying this final rule, as well as some of the relevant historical background related to the establishment of standards for air compressors.

[13] DOE used average social costs with a 3-percent discount rate because these values are considered as the ''central'' estimates by the interagency group.

A. Authority

Title III of the Energy Policy and Conservation Act of 1975, as amended (''EPCA'' or, in context, ''the Act''), sets forth a variety of provisions designed to improve energy efficiency. (42 U.S.C. 6291, *et seq.*) Part C of Title III, which for editorial reasons was re-designated as Part A–1 upon incorporation into the U.S. Code (42 U.S.C. 6311–6317), establishes the ''Energy Conservation Program for Certain Industrial Equipment.'' EPCA provides that DOE may include a type of industrial equipment, including compressors, as covered equipment if it determines that to do so is necessary to carry out the purposes of Part A–1. (42 U.S.C. 6311(2)(B)(i) and 42 U.S.C. 6312(b)). The purpose of Part A–1 is to improve the efficiency of electric motors and pumps and certain other industrial equipment in order to conserve the energy resources of the Nation. (42 U.S.C. 6312(a)). On November 15, 2016 DOE published a Notice of Final Determination of Coverage determining that compressors meet the statutory criteria for classifying industrial equipment as covered, because compressors are a type of industrial equipment (1) which in operation consume, or are designed to consume, energy; (2) are to a significant extent distributed in commerce for industrial or commercial use; and (3) are not covered under 42 U.S.C. 6291(a)(2). 81 FR 79991.

Pursuant to EPCA, DOE's energy conservation program for covered products consists essentially of four parts: (1) Testing; (2) labeling; (3) the establishment of Federal energy conservation standards; and (4) certification and enforcement procedures. For commercial and industrial products, DOE is primarily responsible for labeling requirements. Subject to certain criteria and conditions, DOE is required to develop test procedures to measure the energy efficiency, energy use, or estimated annual operating cost of each covered product. (42 U.S.C. 6295(o)(3)(A), 42 U.S.C. 6316(a) and 42 U.S.C. 6314) Manufacturers of covered products must use the prescribed DOE test procedure as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA and when making representations to the public regarding the energy use or efficiency of those products. (42 U.S.C. 6295(s), 42 U.S.C. 6316(a) and 42 U.S.C. 6314(d)) Similarly, DOE must use these test procedures to determine whether the products comply with standards adopted pursuant to EPCA. (42 U.S.C. 6295(s) and 42 U.S.C. 6316(a)) DOE test procedures for compressors appear at title 10 of the Code of Federal Regulations (''CFR'') part 431, subpart T, appendix A.

DOE follows specific statutory criteria for prescribing new or amended standards for covered equipment, including compressors. Any new or amended standard for a covered product must be designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6316(a), and 42 U.S.C. 6295(o)(2)(A)) Furthermore, DOE may not adopt any standard that would not result in the significant conservation of energy. (42 U.S.C. 6295(o)(3)(B) and 42 U.S.C. 6316(a)) In deciding whether a proposed standard is economically justified, DOE must determine whether the benefits of the standard exceed its burdens. (42 U.S.C. 6295(o)(2)(B)(i) and 42 U.S.C. 6316(a)) DOE must make this determination after receiving comments on the proposed standard and by considering, to the greatest extent practicable, the following seven statutory factors:

(1) The economic impact of the standard on manufacturers and consumers of the products subject to the standard;

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial charges, or maintenance expenses for the covered products that are likely to result from the standard;

(3) The total projected amount of energy (or as applicable, water) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the covered products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy considers relevant. (42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII) and 42 U.S.C. 6316(a))

Further, EPCA, as codified, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii) and 42 U.S.C. 6316(a))

EPCA, as codified, also contains an ''anti-backsliding'' provision, which prevents the Secretary from prescribing any amended standard that either increases the maximum allowable energy use or decreases the minimum required energy efficiency of a covered product. (42 U.S.C. 6295(o)(1) and 42 U.S.C. 6316(a)) Also, the Secretary may not prescribe an amended or new standard if interested persons have established by a preponderance of the evidence that the standard is likely to result in the unavailability in the United States in any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States. (42 U.S.C. 6295(o)(4) and 42 U.S.C. 6316(a))

Additionally, 42 U.S.C. 6295(q)(1) and 42 U.S.C. 6316(a) specify requirements when promulgating an energy conservation standard for a covered product that has two or more subcategories. DOE must specify a different standard level for a type or class of product that has the same function or intended use, if DOE determines that products within such group: (1) Consume a different kind of energy from that consumed by other covered products within such type (or class); or (2) have a capacity or other performance-related feature that other products within such type (or class) do not have, and such feature justifies a higher or lower standard. (42 U.S.C. 6295(q)(1) and 42 U.S.C. 6316(a)) In determining whether a performance-related feature justifies a different standard for a group of products, DOE must consider such factors as the utility to the consumer of the feature and other factors DOE deems appropriate. *Id.* Any rule prescribing such a standard must include an explanation of the basis on which such higher or lower level was established. (42 U.S.C. 6295(q)(2) and 42 U.S.C. 6316(a))

Federal energy conservation requirements generally supersede State laws or regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)–(c) and 42 U.S.C. 6316(a)) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d) and 42 U.S.C. 6316(a)).

B. Regulatory History for Compressors

Currently, there are no Federal energy conservation standards for air

compressors. On December 31, 2012, DOE issued a Notice of Proposed Determination of Coverage (''2012 proposed determination of coverage'') that proposed to establish compressors as covered equipment on the basis that (1) DOE may only prescribe energy conservation standards for covered equipment; and (2) energy conservation standards for compressors would improve the efficiency of such equipment more than would be likely to occur in the absence of standards, so including compressors as covered equipment is necessary to carry out the purposes of Part A–1. 77 FR 76972 (Dec. 31, 2012). The 2012 proposed determination of coverage tentatively determined that the standards would likely satisfy the provisions of 42 U.S.C. 6312(B). On February 7, 2013, DOE published a notice reopening the comment period on the 2012 proposed determination of coverage. 78 FR 8998.

As noted above, on November 15 2016, DOE published a notice of final determination, which determined that coverage for compressors is necessary to carry out the purposes of Part A–1 of Title III of EPCA. 81 FR 79991.

On February 5, 2014, DOE published in the **Federal Register** a notice of public meeting, and provided a Framework document that addressed potential standards and test procedures for these products. 79 FR 6839. DOE held a public meeting to discuss the framework document on April 1, 2014. At this meeting, DOE discussed and received comments on the Framework document, which covered the analytical framework, models, and tools that DOE uses to evaluate potential standards; and all other issues raised relevant to the development of energy conservation standards for the different categories of compressors. On March 18, 2014, DOE extended the comment period. 79 FR 15061.

On May 5, 2016, DOE issued a notice of proposed rulemaking (''NOPR'') to propose test procedures for certain compressors. 87 FR 27220. On June 20, 2016, DOE held a public meeting to discuss the test procedure NOPR and receive comments from interested parties. On December 1, 2016, DOE issued a test procedure final rule that amends subpart T of Title 10 of the Code of Federal Regulations, part 431 (10 CFR part 431), and which contains definitions, materials incorporated by reference, and test procedures for determining the energy efficiency of certain varieties of compressors. The test procedure final rule also amended 10 CFR part 429 to establish sampling plans, representations requirements, and enforcement provisions for certain compressors.

On May 19, 2016, DOE published a notice of proposed rulemaking pertaining to energy conservation standards for compressors (''May 2016 NOPR'').[14] 81 FR 31680. DOE held a public meeting to discuss the May 2016 NOPR on June 20, 2016.

In this final rule, DOE responds to comments received from interested parties in response to the proposals presented in the May 2016 NOPR, either during the June 2016 NOPR public meeting or in subsequent written comments.[15] In response to the May 2016 NOPR, DOE received 24 written comments in addition to the verbal comments made by interested parties during the June 2016 NOPR public meeting. The commenters included: The Alliance to Save Energy (ASE); the American Council for an Energy Efficient Economy (ACEEE); the Appliance Standards Awareness Project (ASAP); Atlas Copco AB (Atlas Copco); Castair; the U.S. Chamber of Commerce, representing the American Chemistry Council, the American Coke and Coal Chemicals Institute, the American Forest & Paper Association, the American Fuel & Petrochemical Manufacturers, the American Petroleum Institute (API), the Association of Home Appliance Manufacturers, the Brick Industry Association, the Council of Industrial Boiler Owners, the National Association of Manufacturers, the National Mining Association, the National Oilseed Processors Association, and the Portland Cement Association collectively referred to as the ''U.S. Chamber of Commerce'' (U.S. Chamber of Commerce); the Compressed Air & Gas Institute (CAGI); Compressed Air Systems; Industrial Energy Consumers of America (IECA); Institute for Policy Integrity representing the Environmental Defense Fund, Institute for Policy Integrity at New York University School of Law, the Natural Resources Defense Council, and the Union of Concerned Scientists, collectively referred to as the ''Joint Advocates'' (Joint Advocates); Ingersoll Rand; Jenny Products, Kaeser Compressors; the Natural Resources Defense Council (NRDC); the Northeast Energy Efficiency Partnership (NEEP); the Northwest Energy Efficiency Alliance (NEEA); Michaels and Knappenberger, of the Center for the Study of Science, Cato Institute (Cato Institute); the Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE), and Southern California Gas Company (SCGC), collectively referred to as the California Investor Owned Utilities (CA IOUs); the People's Republic of China (P. R. China); Scales Industrial Technologies (Scales); Sullair; Saylor-Beall Manufacturing Company and Sullivan-Palatek, collectively referred to as ''Sullivan-Palatek.'' In this document, DOE identifies comments received in response to the May 2016 standard NOPR by the commenter, the number of document as listed in the docket maintained at *www.regulations.gov* (Docket No. EERE–2013–BT–STD–0040), and the page number of that document where the comment appears (for example: CAGI, No. 10 at p. 4). If a comment was made verbally during the NOPR public meeting, DOE specifically identifies those as being located in the NOPR public meeting transcript (for example: CAGI, public meeting transcript, No. 16 at p. 100). This final rule also contains certain relevant comments submitted in response to the compressors test procedure rulemaking (Docket No. EERE–2014–BT–TP–0054) and the December 2012 proposed determination of coverage (Docket No. EERE–2012–BT–DET–0033); such comments will be identified with the appropriate docket number.

C. Process Rule

DOE notes that Appendix A established procedures, interpretations, and policies to guide DOE in the consideration and promulgation of new or revised appliance efficiency standards under EPCA. (See section 1 of 10 CFR part 430 subpart C, appendix A) These procedures are a general guide to the steps DOE typically follows in promulgating energy conservation standards. The guidance recognizes that DOE can and will, on occasion, deviate from the typical process. (See 10 CFR part 430, subpart C, appendix A, section 14(a)) The guidance provides, among other things that DOE issues, final, modified test procedures for a given product prior to publication of the NOPR proposing energy conservation standards. In this particular instance, DOE deviated from its typical process and issued the energy conservation standards notice of proposed rulemaking prior to finalizing the test procedure. DOE believed this action was appropriate in this specific instance because DOE was proposing a commonly used industry test procedure methodology with few modifications. DOE developed the proposed energy

[14] Available at: *www.regulations.gov/document?D=EERE-2013-BT-STD-0040-0038.*

[15] DOE notes that certain comments pertaining to the definition of ''compressors'' were addressed in the 2016 notice of final determination.

conservation standards using representations for isentropic efficiency from manufacturers' CAGI datasheets that were developed consistent with the proposed test procedure methodology and are readily available on the market today. Thus, DOE believes that industry has a common understanding of the resulting efficiencies of different compressors designs being contemplated in the energy conservation standards rulemaking and could provide meaningful comments to DOE about the impacts of such standards. Based on the test procedure adopted in the December 2016 final rule, DOE remains confident that the timing deviation did not adversely impact the manufacturers ability to understand and provide reasonable comments on the proposed energy conservation standards rulemaking due to the widespread availability of data consistent with DOE's test procedure and DOE's ability to take those comments into consideration in developing the final standard levels as included in this final rule.

III. General Discussion

A. Definitions

1. Definition of Covered Equipment

In the November 2016 notice of final determination, DOE adopted the following definition for compressor:

Compressor means a machine or apparatus that converts different types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any higher pressure values above atmospheric pressure and has a pressure ratio at full-load operating pressure greater than 1.3.

To support the definition of compressors, DOE adopts the following definition for pressure ratio at full-load operating pressure in the test procedure final rule:

Pressure ratio at full-load operating pressure means the ratio of discharge pressure to inlet pressure, determined at full-load operating pressure in accordance with the test procedures prescribed in 10 CFR 431.344.

DOE received comments on the definition of ''compressor'' in both the energy conservation standard and test procedure dockets. DOE addresses all comments related to the definition of compressor in the November 2016 notice of final determination.

2. Air- and Liquid-Cooled Compressors

In the energy conservation standards NOPR, DOE proposed the following definition for water-cooled compressors: A compressor that utilizes chilled water provided by an external system to cool both the compressed air and, if present, any auxiliary substance used to facilitate compression. DOE also proposed the following definition for air-cooled compressors: A compressor that utilizes air to cool both the compressed air and, if present, any auxiliary substance used to facilitate compression. 81 FR 31680, 31699 (May 19, 2016)

In response to the definition of water-cooled compressors in the energy conservation standards NOPR, Kaeser Compressors suggested replacing the term ''chilled water'' with ''water'' as the water is not always chilled. (Kaeser Compressors, Public Meeting Transcript, No. 0044 at pp. 22–23) Edison Electric Institute stated that the definition of water-cooled compressors does not account for compressors that use a combination of different fluids. (Edison Electric Institute, Public Meeting Transcript, No. 0044 at p. 23) Sullair commented that glycol cooling, which has a percentage of water, is an example in which the definition for water-cooled compressors fails to define all non-air cooling methods. (Sullair, No. 0056 at p. 13)

In response to commenters' concerns, DOE recognizes that the term ''chilled water'' may be unduly limiting. For this final rule, DOE is revising the term ''water-cooled compressor'' and its associated definition to refer to ''liquid'' instead of ''chilled water.'' DOE believes that the term ''liquid'' is sufficiently broad to encompass the concerns raised by commenters. Omission of the term ''chilled'' similarly aids that objective, as it is not DOE's intent to limit the definition to compressors that use only chilled liquids.

Sullair also commented that compressors could have both liquid and air cooling (such as a closed-loop water system with a radiator and fan), and thus would represent a potential loophole to classify the compressor within an equipment class with a less-stringent standard. (Sullair, No. 0056 at pp. 13–14; Sullair, Public Meeting Transcript, No. 0044 at p. 23) DOE believes Sullair is referring to a scenario where a compressor with both liquid and air-cooling could be classified as an air-cooled compressor, rather than a liquid-cooled compressor, as the standards proposed in the energy conservation standards NOPR are less stringent for air-cooled equipment.

In response to Sullair's comment, DOE recognizes potential ambiguity between the definition of ''air-cooled compressor'' and ''liquid-cooled compressor.'' Specifically, the definitions proposed in the energy conservation standards NOPR are not mutually exclusive, as a compressor could feasibly employ both liquid and air cooling in the same model. As a result, in this final rule, DOE is modifying the definition of ''air-cooled compressor'' to expressly exclude compressors that meet the definition of ''liquid-cooled compressor.'' Doing so establishes mutual exclusivity among the equipment varieties, ensuring that no compressors can meet the definition of both air-cooled and liquid-cooled compressors.

With respect to Sullair's specific example (a closed-loop water system with a radiator and fan), DOE clarifies that such a compressor would not meet the definition of ''liquid-cooled compressor,'' because the coolant system is part of the compressor package and is not an external system. Specifically, the use of the term ''provided by an external system'' in the definition of liquid-cooled compressors means that the system that provides the liquid coolant is not integral to the compressor package, and the liquid coolant system energy consumption and power draw are not accounted for when the compressor is tested according to the DOE test procedure.

Further, in the test procedure final rule, DOE adopts a list of ancillary equipment that must be attached to the compressor during performance testing. DOE includes two lists; the first describes ancillary equipment that must be included on a unit when testing, regardless of whether it is distributed in commerce with the basic model under test; the second list contains ancillary equipment that is only required if it is distributed in commerce with the basic model under test. ''Cooling fan(s) and motors'' appear on the second list. However, there is no requirement that cooling equipment beyond ''cooling fan(s) and motors,'' including equipment related to closed-loop liquid coolant circulation, be connected for testing purposes. As such, Sullair's specific example (a closed-loop water system with a radiator and fan within the package) is an air-cooled compressor and is tested with cooling fans engaged, but any water pumping equipment is not be required to be running.

Based on the discussion in this section, DOE is adopting the following, revised, definitions for liquid-cooled and air-cooled compressors.

''Liquid-cooled compressor'' means a compressor that utilizes liquid coolant provided by an external system to cool both the compressed air and, if present, any auxiliary substance used to facilitate compression.

''Air-cooled compressor'' means ''a compressor that utilizes air to cool both the compressed air and, if present, any auxiliary substance used to facilitate compression, and that is not a liquid-cooled compressor.''

B. Scope of Energy Conservation Standards

In the energy conservation standards NOPR, DOE proposed to limit the scope of applicability of standards to compressors that meet the following criteria:

- Are air compressors,
- are rotary compressors,
- are driven by a brushless electric motor,
- are distributed in commerce with a compressor motor nominal horsepower greater than or equal to 1 and less than or equal to 500 horsepower (''hp''), and
- operate at a full-load operating pressure of greater than or equal to 31 and less than or equal to 225 pounds per square inch gauge (''psig''). 81 FR 31680, 31689–31693 (May 19, 2016).

In the test procedure final rule, DOE limits the scope of test procedure applicability to compressors that meet the following criteria:

- Are air compressors;
- are rotary compressors;
- are not liquid ring compressors;
- are driven by a brushless electric motor;
- are lubricated compressors;
- have a full-load operating pressure of 75–200 psig;
- are not designed and tested to the requirements of The American Petroleum Institute standard 619, ''Rotary-Type Positive-Displacement Compressors for Petroleum, Petrochemical, and Natural Gas Industries;'' and
- have a capacity that is either:
  - 10–200 compressor motor nominal horsepower (hp), or
  - 35–1,250 full-load actual volume flow rate (cfm).

After considering comments received in response to the energy conservation standards NOPR, DOE is aligning the scope of energy conservation standards in this final rule to be similar, but less broad than the aforementioned scope of the test procedure final rule. The following sections, III.B.1 through III.B.8, discuss, in detail, each scope limitation, interested party comments, and DOE's conclusions.

1. Equipment System Boundary

In the energy conservation standards NOPR, DOE proposed to limit the scope of the standards to ''air compressors'' that compress atmospheric air and consist of a bare compressor, driver(s), mechanical equipment to transfer energy from the driver to the bare compressor, and any ancillary equipment shipped in commerce with the compressor. DOE also proposed definitions for the terms ''air compressor,'' ''bare compressor,'' ''driver,'' ''mechanical equipment,'' and ''ancillary equipment.'' 81 FR 31680, 31688–31690 (May 19, 2016). DOE received comments on its proposal to limit the scope of the energy conservation standards to air compressors. These comments are discussed in detail below.

a. Air Compressor

Generally, DOE considered and responded to comments relating to the definition of the term ''air compressor'' in the test procedure final rule. Beyond those comments considered in the test procedure final rule, Scales Industrial Technologies commented that there are opportunities to improve the overall efficiency of a compressed air system on the demand side that should also be considered. (EERE–2014–BT–TP–0054, Scales Industrial Technologies, No. 0013 at p. 9)

In the energy conservation standards NOPR, DOE discussed the possibility of establishing standards at the ''compressed air system'' (''CAS'') level, but ultimately proposed standards at the packaged compressor level for the following reasons:

- Each CAS is often unique to a specific installation;
- each CAS may include equipment from several different manufacturers; and
- a single CAS can include several different compressors, of different types, which may all have different full-load operating pressures. 81 FR 31680, 31689–31690 (May 19, 2016).

As discussed in the energy conservation standards NOPR, implementing a broader, CAS-based approach to compressor efficiency would require DOE to (1) establish a methodology for measuring losses in a given air-distribution network; and (2) assess what certification, compliance, or enforcement practices would be required for a large variety of system designs, and potential waiver criteria. For these reasons, in the energy conservation standards NOPR, DOE concluded that the CAS is not a viable equipment classification level for coverage. DOE recognizes the argument set forth by Scales Industrial Technologies and does not dispute the potential for savings beyond the compressor package. Nonetheless, the decision not to pursue standards at the CAS level was made, not due to absence of potential energy savings, but due to impracticality of creating a single standard and test procedure that would apply meaningfully to the great variety of air distribution systems. DOE continues to conclude that the CAS is not appropriate for this final rule.

Castair commented that the scope of the energy conservation standards should be limited only to air ends, stating that the assemblers of air compressors can do little to improve efficiency. (Castair, No. 0045 at p. 1)

In the energy conservation standards NOPR, DOE also discussed the possibility of establishing standards at the bare compressor level. Ultimately, DOE opted not to limit standards to the bare compressor, concluding that greater savings were available at the packaged compressor level. 81 FR 31680, 31689–31690 (May 19, 2016). In response to Castair's comment, DOE notes that energy savings can be achieved through proper component selection (including the bare compressor and driver) and system design. For this reason, DOE maintains the approach proposed in the energy conservation standards NOPR and is applying standards at the compressor package level.

b. Ancillary Equipment

In the test procedure NOPR, DOE proposed using the term ''ancillary equipment'' to mean ''any equipment distributed in commerce with an air compressor that is not a bare compressor, driver, or mechanical equipment.'' 81 FR 31680, 31690 (May 19, 2016). In other words, it served as a catch-all for package components that did not fall into another category but were part of the package purchased by an end user.

In the test procedure final rule, DOE adopts a requirement different from what DOE proposed in the test procedure NOPR. DOE defines two lists of equipment; the first list includes items that must be attached during testing, and the second list includes items that must be attached during testing if the package is distributed in commerce configured as such. However, manufacturers may opt to test with additional equipment than is on the two lists, at their preference.

CAGI commented that the definition of ancillary equipment should be more specific and provided a list of ancillary equipment that is common and required for safe operation of a compressor. Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek supported the CAGI position and list. (CAGI, No. 0052 at pp. 6–8; Ingersoll Rand, No. 0055 at pp. 1, 4; Kaeser Compressors, No. 0053 at p.1;

Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at pp. 1, 6; Sullivan-Palatek, No. 0051 at p.1) CAGI further commented that the list is almost identical to the European Union's Lot 31 Draft Ecodesign Regulation (hereafter ''Lot 31 draft regulation,'' which is discussed in section IV.C.1.b) list of ancillary equipment, and clarified that manufacturers should provide missing ancillary equipment that is not installed on their compressor for compliance and enforcement testing. (CAGI, No. 0052 at pp. 6–8)

Atlas Copco commented that the definition of ancillary equipment as proposed in both the test procedure NOPR and the energy conservation standards NOPR is not consistent, as the DOE hoped, with the draft EU standards. Atlas Copco further stated that the definition as proposed penalizes manufacturers who efficiently include dryers within the design of the compressor package. Finally, Atlas Copco emphasizes the need for an equitable standard for defining ancillary equipment that allows for comparison across units, similar to the draft EU standards. (Atlas Copco, No. 0054 at p. 13)

DOE has considered and responded to the preceding comments in the test procedure final rule by adopting two lists to describe the minimum equipment configuration for compressor testing. The first list contains equipment that must be included on a unit when testing, regardless of whether it is distributed in commerce with the basic model under test. This table aligns with many of the items that CAGI specified to be part of a standard package. The second list contains equipment that is only required if it is distributed in commerce with the basic model under test. DOE believes that it is impossible to require that items from this second list of ancillary equipment be connected for testing, as many basic models do not require some of this ancillary equipment to achieve their basic functionality and as adding such components would be impossible or impractical.

ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE commented that DOE should independently investigate the energy consumption of ancillary equipment that manufacturers wish to exclude, such as dryers, as this equipment has a significant impact on air compressor energy efficiency. (ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE, No. 0060 at p. 4)

Dryers and other unrequired ancillary equipment may consume significant energy in certain applications. However, because they are not universally included as part of a compressor package, DOE did not include them in the list of equipment required for testing. DOE may investigate the appropriateness of test procedures for air dryers and other unrequired ancillary equipment—either as part of a compressor, or separately—as part of future rulemakings.

2. Compression Principle: Rotary and Reciprocating Compressors

In the energy conservation standards NOPR, DOE analyzed rotary and reciprocating compressors as separate equipment classes, and concluded that each provides a distinct utility that materially affects energy consumption. 81 FR 31680, 31697–31698 (May 19, 2016). Ultimately, DOE did not propose energy conservation standards for reciprocating compressors because the energy conservation standards NOPR analyses showed that such proposed standards were not economically justified. 81 FR 31680.

As discussed in the energy conservation standards NOPR and during the accompanying public meeting, DOE performed the reciprocating compressor analyses based on a limited data set. Specifically, DOE had limited data characterizing reciprocating compressor performance, manufacturer selling price,[16] and shipments in the U.S. market. 81 FR 31680, 31707, 31717, 31724 (May 19, 2016). In the energy conservation standards NOPR, DOE put forth analysis based on the limited data that was available and requested both comment and better data from interested parties in order to strengthen its analysis.

In response, DOE received no quantitative reciprocating compressor data from commenters. Additionally, in the time since the energy conservation standards NOPR, DOE was unable to obtain, from other sources, any additional reciprocating compressor data. As discussed in the energy conservation standards NOPR, the availability of reciprocating compressor performance data is extremely limited. 81 FR 31680, 31707 (May 19, 2016). This continues to remain true. Specifically, manufacturers of reciprocating compressors do not typically performance test their equipment or publish performance information. Consequently, to collect the performance data required to establish energy conservation standards, DOE will need to work with manufacturers, independent labs, and/or other interested parties to test and gather such data. DOE may pursue such avenues in the future, however at this time DOE's performance data remains limited.

Sullivan-Palatek commented that because DOE does not have performance data on reciprocating compressors, it should delay any decision to combine or separate an equipment class until reciprocating data can be collected and analyzed. (Sullivan-Palatek, No. 0051 at p. 6)

In the absence of new quantitative data, DOE agrees with Sullivan-Palatek and is not confident that the reciprocating compressor data underlying the energy conservation standards NOPR analyses is sufficient to definitively conclude, in this final rule, that energy conservation standards for reciprocating compressors are not economically justifiable. Therefore, DOE is deferring consideration of energy conservation standards until it can obtain performance data to assess the possibility for economically justified energy savings for different categories of reciprocating compressors. DOE makes no determination regarding such savings in this final rule, and reiterates that reciprocating compressors remain as covered equipment.

Regarding reciprocating compressors, interested parties also provided comments related to equipment classes, potential energy savings, substitution risk, harmonization with the European Union, and potential energy conservation standard levels. These topics are discussed in the following sections.

a. Equipment Classes

CAGI, Castair, and Compressed Air Systems agreed with DOE's conclusion that rotary and reciprocating compressors warranted separate equipment classes. (CAGI, Public Meeting Transcript, No. 0044 at p. 19; Compressed Air Systems, No. 0061 at p. 2) Specifically, Castair stated that the different designs of rotary and reciprocating equipment make the technologies better suited to continuous and intermittent demand cycles, respectively. (Castair, No. 0062 at p. 1)

DOE agrees with commenters that reciprocating and rotary compressors should be analyzed in separate equipment classes for the reasons presented in the energy conservations standards NOPR, and that they carry differential utility and ability to reach greater efficiencies. 81 FR 31680, 31697–31698 (May 19, 2016). However, because DOE is not establishing energy conservation standards reciprocating compressors in this final rule, DOE will

[16] DOE notes that it had retail price data from online retailers, but limited direct manufacturer selling price data. DOE did estimate manufacturer selling price from the retail price data using estimated markups.

not be establishing formal equipment classes for reciprocating compressors in this final rule. DOE may consider CAGI's and Castair's remarks in any future rulemaking.

b. Energy Savings

ASAP and NEEA commented that the shipment data for reciprocating compressors led them to believe that a large amount of energy consumption is attributed to reciprocating compressors. ASAP asserted that by not setting standards for the equipment class, DOE misses a significant opportunity to reduce the energy consumption of compressors. (ASAP, Public Meeting Transcript, No. 0044 at pp. 9–10; NEEA, Public Meeting Transcript, No. 0044 at p. 115) Additionally, ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE commented that DOE should reduce the scope of compressor capacity to include only the large reciprocating compressors used in commercial and industrial applications, which do not have the low-duty cycles of the residential hobby compressors and, therefore, should produce a greater consumer benefit at the proposed standard levels. (ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at p. 2) The CA IOUs also cited the missed opportunity for ''significant energy savings'' as the reason to establish a standard for reciprocating compressors. (CA IOUs, No. 0059 at pp. 2–3)

DOE reiterates that it is not analyzing reciprocating compressors in this final rule due to a lack of data, but DOE may consider comments received in any future rulemaking.

c. Substitution Risk

ASAP, ACEEE, NRDC, NEEP, ASE, the CA IOUs, NEEA, and NWPCC suggested that DOE establish standards for a subset of reciprocating compressors, with ASAP suggesting inclusion of large commercial and industrial reciprocating compressors, and NEEA and NWPCC suggesting inclusion of reciprocating compressors from 20 to 100 compressor motor nominal horsepower. NEEA and NWPCC further commented that the absence of energy conservation standards for reciprocating compressors between 20 and 100 compressor motor nominal horsepower would pose a substitution risk due to the increased cost of rotary compressors subject to an energy conservation standard. (NEEA and NWPCC, No. 0057 at p. 2)

Atlas Copco commented that using a ''technology approach'' in establishing the scope of an energy conservation standards rule grants unfair advantage to unregulated technologies at the low and high ends of capacity ranges covered. Specifically, Atlas Copco asserted that turbo and piston compressors (if not included in the DOE test procedure and energy conservation standards) would realize the increased cost due to regulation, and therefore may gain popularity over the regulated rotary compressors. (Atlas Copco, No. 0054 at pp. 2, 11–12)

In response to Atlas Copco's concerns regarding unfair competition, DOE notes that it adopts a smaller compressor motor nominal horsepower range in the test procedure final rule, and is also doing so in this energy conservation standards final rule. The new scope alleviates Atlas Copco's concerns, as DOE's research indicates that few reciprocating compressors are offered with a compressor motor nominal horsepower greater than 10 hp; section III.B.4 provides further discussion of this topic. In that section, DOE directly addresses Atlas Copco's concerns and considers competition from unregulated compressor technologies in determining whether to reduce scope.

In response to NEEA and NWPCC, DOE reviewed marketing literature of major reciprocating compressor manufacturers, and found that the largest marketed reciprocating compressor available (between 75 and 200 psig) has 30 compressor motor nominal horsepower, with 20 compressor motor nominal horsepower being a more typical upper limit.[17] Additionally, based on confidential discussions with manufacturers, DOE believes that shipments of the available compressors with greater than or equal to 20 hp are extremely limited. For these reasons, DOE believes a substitution incentive is unlikely.

d. Harmonization With the European Union

Atlas Copco recommended that DOE base its regulation on standard air as defined by Lot 31, and noted that the Lot 31 regulation is ''technology independent.'' Atlas Copco clarified that Lot 31 defines categories for standard air compressors that group compressors based on three flow profiles: (1) Fixed flow, (2) variable flow, and (3) intermittent use. Reciprocating compressors are typically in the intermittent use category. Atlas Copco notes that the intermittent use category may not be included in the Lot 31 draft regulation due to the small potential energy savings. (Atlas Copco, No. 0054 at p. 12)

In response to this comment, DOE first notes that the Lot 31 draft regulation on ''standard air compressors'' does not classify compressors by ''fixed flow, variable flow and intermittent use.'' Rather, the Lot 31 draft regulation establishes and defines two equipment groupings, ''rotary standard'' and ''piston standard'' air compressors, in a similar manner to the equipment classes proposed in the energy conservation standards NOPR.[18] Further, DOE evaluated all publicly available reports and information on the Lot 31 website,[19] and found no mention of any regulatory approach that would define three sub-categories of fixed flow, variable flow and intermittent use. DOE recognizes that work to amend the Lot 31 draft regulation may be occurring in private. However, without any published or publicly available regulatory information, DOE does not believe it is appropriate to speculate on hypothetical decisions that the EU regulators may make.

As a result, DOE's proposal in the energy conservation standards NOPR to separate equipment classes for reciprocating and rotary compressors aligns with the current published version of the Lot 31 draft regulation,[20] as the Lot 31 draft regulation proposes different minimum energy efficiency requirements for rotary and reciprocating compressors. Atlas Copco's claim that the whole category of intermittent use could possibly be exempted because it has too little savings potential also supports DOE's conclusion in the energy conservation standards NOPR that reciprocating and rotary compressors each offer distinct utility that materially affects energy consumption, and that these differences necessitate separate equipment classes. 81 FR 31680, 31697–31698 (May 19, 2016).

[17] See: *www.quincycompressor.com/products/reciprocating-piston/, www.saylor-beall.com/base-mounted/, www.atlascopco.us/en-us/compressors/products/Air-compressor/Oil-injected-rotary-screw-air-compressor/LE-LT-industrial-oil-lubricated-piston-compressors, www.ingersollrandproducts.com/am-en/products/air/small-reciprocating-air-compressors/electric-driven-two-stage, http://usa.boge.com/artikel/Screw_Compressors/CL.jsp?msf=200%2C100%2C100, www.gardnerdenver.com/gdproducts/compressors/reciprocating/r-series-low-pressure-reciprocating-compressors/#13223.*

[18] For copies of the EU draft regulation: *www.regulations.gov/contentStreamer?documentId=EERE-2013-BT-STD-0040-0031&disposition=attachment&contentType=pdf*

[19] As viewed here: *www.eco-compressors.eu/documents.htm*

[20] For copies of the EU draft regulation: *www.regulations.gov/contentStreamer?documentId=EERE-2013-BT-STD-0040-0031&disposition=attachment&contentType=pdf*

e. Potential Standards for Reciprocating Compressors

ASAP, ACEEE, NRDC, NEEP, ASE, NEEA and NWPCC argued that establishing baseline standards for reciprocating compressors would both promote efficiency in the marketplace and generate test data for future rulemakings. (ASAP, Public Meeting Transcript, No. 0044 at p. 152; NEEA and NWPCC, No. 0057 at p. 2; ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at pp. 2–3)

DOE agrees that a baseline standard for reciprocating compressors would generate performance data. However, DOE reiterates that it lacks sufficient data to conclude whether any energy conservation standard, including a baseline standard, would be economically justified. Therefore, DOE is not analyzing reciprocating compressor in this final rule, but may do so in a future rulemaking.

3. Driver Style

In the energy conservation standards NOPR, DOE proposed to establish the scope of energy conservation standards using driver style as a differentiator. Specifically, DOE defined the scope of driver styles covered under the proposed standard by only including single-phase and three-phase brushless electric motors. 81 FR 31680, 31691–31692 (May 19, 2016).

The following sections discuss the comments that DOE received regarding the scope of drivers proposed in the energy conservation standards NOPR.

a. Exclusion of Non-Electric Drivers

In the energy conservation standards NOPR, DOE proposed to align the scope of the energy conservation standards with the scope of applicability of the test procedure NOPR and not include engine-driven equipment in the scope. 81 FR 31680, 31691 (May 19, 2016).

The Edison Electric Institute expressed disappointment that the NOPR was only focused on electric motors and was not more fuel-neutral with respect to compressor drivers, pointing out the savings potential for compressors driven by natural gas would be high, given their usage in 2015 was 0.86 quad. (Edison Electric Institute, Public Meeting Transcript, No. 0044 at p. 5)

In response to EEI's comment, engine-driven compressors were considered in the February 5, 2014 Framework document for compressors and discussed extensively in the May 5, 2016 test procedure NOPR. 79 FR 6839 and 81 FR 27220. Specifically, in the test procedure NOPR, DOE concluded that the inclusion of engine-driven compressors was not appropriate for various reasons, including their differing utility compared to electric compressors, their existing coverage under the U.S. Environmental Protection Agency's Tier 4 emissions regulations, and the limited test data available under Annex D of ISO 1217:2009 to verify suitability as a DOE test procedure. For these reasons, DOE noted that engine-driven compressors would more appropriately be considered as part of a future rulemaking. 81 FR 27220, 27229 (May 5, 2016).

DOE continues to conclude that engine-driven compressors are unique equipment with different performance, applications, and test requirements from compressors driven by electric motors. As a result, DOE continues to conclude engine-driven compressors would be more appropriate to address as part of a separate rulemaking specifically considering such equipment. DOE is limiting the scope of this final rule to only compressors driven by electric motors.

b. Exclusion of Brushed Motors

In the energy conservation standards NOPR, DOE proposed to align with the scope of applicability of the test procedure NOPR and only include those compressors that are driven by brushless motors in the scope. 81 FR 31680, 31692 (May 19, 2016).

The CA IOUs commented that DOE should cover brushed motors in addition to brushless motors, citing the potential loophole of a market shift toward unregulated brushed motors and the higher potential for energy savings as reasons for their inclusion. (CA IOUs, No. 0059 at p. 3)

DOE reiterates that brushed motors are uncommon in compressors with significant potential energy savings (*i.e.,* high operating hours) due to higher maintenance costs, short operating lives, significant acoustic noise, and electrical arcing. For these reasons, DOE concludes that brushed motors are not a viable substitution risk for compressors within the scope of the compressor test procedures. DOE is continuing to exclude compressors driven by brushed motors from the scope of this final rule.

c. Exclusion of Single-Phase Motors

In the energy conservation standards NOPR DOE proposed a standard that was applicable to both single- and three-phase rotary compressors, while acknowledging that compressors with single-phase motors may be less efficient. 81 FR 31680, 31691–31692 (May 19, 2016).

Castair commented that single-phase motors should be excluded from the scope of the standard because of their small sales volume. Castair argued that single-phase compressors comprise a small portion of the market, three-phase compressor offerings are expanding, and customers that do not have three-phase power typically cannot afford to install three-phase power. (Castair, No. 0062 at p. 1) Sullair also recommended that DOE limit the scope of the energy conservation standards to compressors with compressor motor nominal horsepower greater than 10 hp, but only cited the simplicity of reducing the number of equipment classes and solving the issue of single-phase rotary compressors. (Sullair, No. 0056 at pp. 7–8)

Sullivan-Palatek suggested that DOE limit the scope of the energy conservation standard to compressors with compressor motor nominal horsepower greater than 10 hp.[21] According to Sullivan-Palatek, limiting the scope of the energy conservation standard to compressors with compressor motor nominal horsepower greater than 10 hp would eliminate single-phase compressors from the scope of the standards and eliminate the risk of product substitution of unregulated reciprocating and scroll compressors. (Sullivan-Palatek, No. 0051 at p. 6; Sullivan-Palatek, No. 0051 at p. 7)

Sullair commented that, although single-phase and three-phase compressor packages are mostly identical, the motor and electrical equipment (*e.g.,* the starter) differ. Sullair also stated that the customer decision in choosing a single-phase or three-phase compressor is driven by the electrical supply at the installation location; customers are not incentivized to purchase a single-phase motor as the installation cost is typically higher than an equivalent three-phase motor when three-phase power facility is available at the installation point. (Sullair, No. 0056 at pp. 7–8)

Ingersoll Rand requested that DOE exclude single-phase compressors if DOE intends to include compressors with a compressor motor nominal horsepower of less than 10 hp. Ingersoll Rand stated that single-phase compressors are purchased out of utility need and do not have the same energy efficiency potential as three-phase

[21] Sullivan-Palatek's comment included recommendations for a scope of both greater than or equal to 10 nominal hp, and greater than 10 nominal hp.

compressors in that compressor motor nominal horsepower range. Ingersoll Rand comments that regulating single-phase compressors under 10 nominal hp would penalize small businesses by requiring the purchase of a more expensive compressor, or requiring the conversion of its existing power supply to three-phase power. (Ingersoll Rand, No. 0055 at p. 5)

As discussed in section III.B.4 of this document, DOE is limiting the scope of this final rule to compressors with compressor motor nominal horsepower of 10 hp or greater. For compressor packages that are within this compressor motor nominal horsepower range and available in single- and three-phase variations through online retailers, DOE found single-phase compressors offered at a similar price, or more expensive than comparable three-phase models. Additionally, DOE acknowledges Sullair's comment that, when three-phase power is available, installation costs for a single-phase compressors may be higher. Based on the similar prices DOE found through retailers, and the potential higher installation costs for single-phase compressors, DOE agrees with Sullair's comment that there is not an incentive to choose single-phase equipment instead of three-phase equipment. Therefore, DOE is limiting the scope of this final rule to compressors with three-phase motors. With the reduction of scope to include only three-phase compressors of 10 nominal hp or greater, Ingersoll Rand's concern regarding single-phase compressors of 10 nominal hp or less is no longer applicable.

DOE also received the following comments regarding the separation of equipment classes. Because single-phase compressors are not included within the scope of the standards established by this final rule, these comments are no longer relevant.

Castair, Compressed Air Systems, and Sullair both supported the creation of equipment classes based on motor phase count. Compressed Air Systems argued that single-phase compressors should be separated from three-phase compressors because there is little data available for single-phase compressors to make an informed decision. Furthermore, Compressed Air Systems argued that a single-phase compressor would not be able to meet a three-phase standard. (Compressed Air Systems, No. 0061 at p. 2)

Sullair made several arguments to support establishing equipment classes based on motor phase count. First, Sullair argued that the availability of premium efficiency single-phase motors is limited, resulting in difficulty in sourcing motors that would meet an energy efficiency standard. Sullair also stated that the customer decision in choosing a single-phase or three-phase compressor is driven by the electrical supply at the installation location; and as noted previously, customers are not incentivized to purchase a single-phase motor as the installation cost is typically higher than an equivalent three-phase motor, when three-phase power is in the facility. Finally, Sullair stated there is a risk of product substitution to unregulated single-phase products, such as reciprocating or scroll compressors, if DOE adopts one standard for single- and three-phase rotary compressors. Sullair argued that manufacturers will likely stop producing single-phase rotary compressors due to the unfair competitive disadvantage relative to competing technologies. (Sullair, No. 0056 at pp. 7–8; Sullair, Sullair, Public Meeting Transcript, No. 0044 at p. 60; Sullair, Public Meeting Transcript, No. 0044 at p. 27)

Sullivan-Palatek supported separating single-phase and three-phase compressors into two separate equipment classes, but also commented that limiting the scope would eliminate the need to create equipment classes for reciprocating and rotary compressors. (Sullivan-Palatek, No. 0051 at pp. 6–7)

With respect to consumer utility, a prime consideration in the establishment of equipment classes, Sullivan-Palatek stated that any application that can support three-phase power can also support single-phase power, but that the reverse is not true. (Sullivan-Palatek, Public Meeting Transcript, No. 0044 at p. 27)

As noted in this section, the matter of equipment classes by phase count is no longer applicable due to DOE's decision in limiting scope to compressors with three-phase motors. DOE may consider standards for single-phase equipment in a future rule.

4. Compressor Capacity

In the energy conservation standards NOPR, DOE proposed to limit the scope of compressors energy conservation standards to compressors with compressor motor nominal horsepower greater than or equal to 1, and less than or equal to 500 hp. In that NOPR, DOE also reasoned that the compressor industry typically used ''nominal'' motor horsepower as a descriptor of compressor capacity. 81 FR 31680, 31692–31693 (May 19, 2016).

DOE received a number of comments in response to the proposed compressor capacity limitations. Commenters raised concerns regarding two facets of the compressor capacity scope: (1) The compressor motor nominal horsepower range included in the scope and (2) the coupling of compressor motor nominal horsepower and actual volume flow rate in the scope definition. These comments are discussed in sections III.B.4.a and III.B.4.b of this document.

a. Compressor Motor Nominal Horsepower Range

Interested parties commented broadly on compressor motor nominal horsepower scope. ASAP, ACEEE, NEEA, NRDC, NEEP, ASE and the CA IOUs supported the proposed horsepower scope limitations. (ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at p. 4; CA IOUs, No. 0059 at p. 3)

CAGI suggested a compressor motor nominal horsepower range of 10 to 200 hp. (CAGI, No. 0052 at p. 9) Ingersoll Rand,[22] Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at pp. 1, 9–10; Sullivan-Palatek, No. 0051 at p. 1)

Scales Industrial Technologies suggested a compressor motor nominal horsepower scope of 15 hp to 200 or 250 hp. (EERE–2014–BT–TP–0054, Scales Industrial Technologies, No. 0013 at p. 3) Atlas Copco stated that it had no objection to inclusion of compressors of greater than 500 nominal hp, with no upper limit specified. (Atlas Copco, No. 0054 at p. 13)

Interested parties also provided a variety of specific rationales to support their recommendations. DOE grouped the specifics of interested party comments into six categories: Data scarcity, substitution incentive, certification, consistency with the European Union, and energy savings. The following sections discuss these comments.

Data Scarcity

CAGI noted the scarcity of compressor data above a compressor motor nominal

[22] DOE notes that in response to the 2012 proposed determination of coverage, Ingersoll Rand commented that a number of small compressors (retail, consumer or commercial-based) are sold in the US market, but may not have a significant impact of energy savings if included in this rulemaking; further, the costs associated with coverage would have to be passed to the consumer as the profit margins are low for this type of compressor. (Docket No. EERE–2012–BT–DET–0033, Ingersoll Rand, No. 0004 at pp. 2–3) DOE views Ingersoll Rand's more recent 2016 test procedure NOPR comments as superseding the views presented in response to the 2012 proposed determination of coverage.

horsepower of 200 hp, citing that 200 hp is the upper limit of the CAGI Performance Verification Program. Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, Sullivan-Palatek supported CAGI's position. (CAGI, No. 0052 at p. 9; CAGI, No. 0052 at p. 9; Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at pp. 1, 6) The commenters argued that DOE's regression curves, which were used to establish efficiency levels and trial standard levels, were created with data that is not readily available for larger (above 200 nominal hp) or smaller (below 10 nominal hp) compressors, and that the regression curves are not appropriate above 200 nominal hp. In response to the 2012 proposed determination of coverage, NEEA commented that performance testing at horsepower levels below 15 was rare and that corresponding data is unreliable. (Docket No. EERE–2012–BT–DET–0033, NEEA, No. 0010 at p. 1).

Although compressors with a compressor motor nominal horsepower greater than 200 hp may publish performance data using CAGI data sheets, Sullair noted that these compressors do not formally participate in the Performance Verification Program and are not subject to independent testing, and the data associated with those compressors is posted voluntarily and not subject to verification. (EERE–2014–BT–TP–0054, Sullair, Public Meeting Transcript, No. 0016 at p. 52) As a result, DOE does not view such data as suitable to establish an energy conservation standard without further investigation. For this reason, and others outlined in the upcoming sections, DOE is not including compressors outside the range of 10–200 compressor motor nominal horsepower in the scope this energy conservation standards final rule. DOE may explore standards for compressors outside the range of 10–200 compressor motor nominal horsepower, in a future rulemaking.

Substitution Incentive

CAGI, Sullair, Kaeser Compressors, and Sullivan-Palatek suggested a compressor motor nominal horsepower range of 10 to 200 hp. They reasoned that the proposed scope in the energy conservation standards NOPR would create an unfair competitive advantage for certain unregulated equipment below 10 nominal hp and over 200 nominal hp. They believe that this competitive advantage could translate to a risk of product substitution from unregulated equipment. The commenters specified scroll and reciprocating equipment as possible competition below 10 nominal hp and centrifugal equipment above 200 nominal hp. (CAGI, No. 0052 at p. 9; Kaeser Compressors, No. 0053 at p. 1; Sullair, No. 0056 at pp. 8–12; Sullair, Public Meeting Transcript, No. 0044 at pp. 129–130) Ingersoll Rand and Mattei Compressors commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Mattei Compressors, No. 0063 at p. 2)

DOE agrees that inclusion of small (less than 10 nominal hp) and larger (greater than 200 nominal hp) rotary compressors could create a competitive disadvantage for manufacturers of rotary compressors. Currently, without any energy conservation standards in place, rotary, centrifugal, reciprocating, and scroll compressors compete with each other over certain overlapping compressor motor nominal horsepower ranges. Adopting standards for rotary compressors alone, in these overlapping nominal horsepower ranges, may disturb the competitive equilibrium. The costs associated with regulation may give the manufacturers of unregulated equipment (*e.g.,* centrifugal, scroll, reciprocating) a competitive advantage, and allow them to incentivize end users to switch from a regulated (rotary) to an unregulated compressor, diminishing the impact of the proposed standard.

For this reason, and others outlined in the preceding and upcoming sections, DOE is not including compressors outside the range of 10 to 200 compressor motor nominal horsepower in the scope of this energy conservation standard final rule.

Certification, Sampling, and Enforcement

Commenters argued against standards for compressors with a compressor motor nominal horsepower greater than 200 hp because of substantial difficulty with sampling and enforcement. Basic models in this range are highly customized and carry low (and sometimes zero, over a period) production volumes. (CAGI, No. 0052 at p. 9; Sullair, No. 0056 at pp. 8–10) Sullair commented that testing costs for units of greater than 200 nominal hp are large relative to those of smaller compressors. (Sullair, Public Meeting Transcript, No. 0044 at pp. 129–130) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullivan-Palatek, No. 0051 at p. 1)

In arguing against standards for compressors of less than 10 nominal hp, Sullair cited the relatively high cost of certification and testing. Sullair argued the cost certification and testing for this type of compressor may be more than 60 percent of the manufacturer selling price (''MSP'') of the compressor unit. (Sullair, No. 0056 at pp. 11–12)

In general, DOE agrees with the concerns that the representations, sampling, and enforcement provisions proposed in the test procedure NOPR may cause significant burden for compressors greater than 200 nominal hp, as many of the larger compressor motor nominal horsepower models are infrequently built and often unavailable for testing. However, regarding compressors of less than 10 nominal hp, DOE asserts that testing cost as a percentage of MSP is not an appropriate metric to evaluate the economic justification of test procedures or energy conservation standard. According to the test procedure final rule, each basic model must test a minimum of two unique models (or use an alternative efficiency determination method, ''AEDM'') to determine compliance. DOE does not require performance or certification testing for all units distributed in commerce. The upfront costs associated with certifying a basic model amortize over all shipments of that basic model, and the ratio of initial testing cost to MSP have no bearing on the overall impact to manufacturers. DOE assesses the specific impacts of certification testing costs (and other upfront conversion costs) in detail in section IV.J.2.c of this document.

For this reason, and others outlined in the preceding and upcoming sections, DOE is not including compressors with greater than 200 compressor motor nominal horsepower in the scope this energy conservation standards final rule.

Consistency With European Union

Atlas Copco expressed support for expanding the scope of covered compressor motor nominal horsepower to include all compressors above 500 hp, noting that this would be consistent with the draft EU standards for compressors, which proposed no upper limit of scope for coverage. (Atlas Copco, No. 0054 at p. 13)

Although the draft EU standards for compressors do not limit applicability based on motor power per se, DOE notes that the motor horsepower is constrained implicitly by the explicit limitations on pressure and flow. Interaction between flow and

compressor motor nominal horsepower is discussed further in section III.B.4.b of this document.

Generally, DOE recognizes the value of aligning requirements with other major regulatory bodies, but DOE will always evaluate alignment on a case-by-case basis. In this particular case, DOE does not view the harmonization benefit associated with coverage of compressor motor nominal horsepower levels greater that 200 as outweighing the burdens. The burdens, as discussed in the previous subsections, include risks of forming a standard based on insufficient data, creating market incentive to substitute to unregulated technologies less than 10 nominal hp or greater than 200 nominal hp, and imposing undue sampling and certification burden on low-volume compressor models. As a result, DOE does not find alignment with the European Union scope limitation to be appropriate in this case.

Energy Savings

In response to the test procedure NOPR, Sullair stated that the number of units and associated potential energy savings above 200 nominal hp are too small to warrant inclusion of those compressors within the test procedure applicability. (EERE–2014–BT–TP–0054, Sullair, No. 0006 at p. 2) In response to the energy conservation standards NOPR, CAGI and Sullair cited the relatively low number of shipments above 200 nominal hp as a reason to reduce the scope of the energy conservations standards. (CAGI No. 0052 at p. 9; Sullair, No. 0056 at pp. 9–10) Similarly, the People's Republic of China questioned the justification for including compressors with low compressor motor nominal horsepower and, consequently, a low potential for energy savings, into the scope of the standard. (EERE–2014–BT–TP–0054, P. R. China, No. 0019 at p. 3)

Other commenters argued that DOE should maintain the scope as proposed. ASAP, ACEEE, NEEA,[23] NRDC, NEEP, and ASE supported the proposed compressor motor nominal horsepower scope limitations. ASAP, ACEEE, NEEA, NRDC, NEEP and ASE stated that 5-percent and 7-percent of the fixed-speed and variable-speed compressor markets, respectively, would not be covered if the scope was limited to a maximum of 200 nominal hp. ASAP ACEEE, NEEA, NRDC, NEEP and ASE further commented that the higher nominal horsepower units represent even greater energy savings potential on a per-unit basis given their energy consumption. (ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at p. 4)

The CA IOUs supported the proposed range of 1–500 nominal hp, which aligns with the motors rulemaking, but encouraged DOE to expand the scope of coverage beyond 500 nominal hp to maximize the potential energy savings of the proposed rulemaking. (CA IOUs, No. 0059 at p. 3)

DOE evaluated the impact of reducing compressor motor nominal horsepower scope to the level recommended by CAGI, Kaeser Compressors, Ingersoll Rand, and Sullivan-Palatek (*i.e.,* 10–200 hp), and estimates that adopting this scope would retain 96.6 percent of the energy savings of the proposed 1–500 hp range. For compressors removed from scope at lower capacities, the low impacts are the result of smaller compressor capacities. For those removed from scope at the higher capacities, the low impacts are the result of extremely low shipments.

Conclusion

As noted previously in this section, DOE received multiple comments regarding the scope of compressor motor nominal horsepower that should be included in this final rule. CAGI, Kaeser Compressors, Ingersoll Rand, Mattei Compressors, Sullair, and Sullivan-Palatek recommended 10 to 200 nominal hp and Scales Industrial Technologies recommended 15 to 200 or 250 nominal hp. Alternatively, ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE supported the proposed horsepower scope limitations, while Atlas Copco and the CA IOUs stated that they had no objection to inclusion of compressors of greater than 500 nominal hp, with no upper limit specified.

In this section, DOE reviewed the recommendations and the justifications provided by commenter, and responded to each. In summary, the aforementioned data scarcity, substitution incentives, certification costs, and limited available shipments and energy savings for compressor outside the 10 to 200 compressor motor nominal horsepower range all contribute to DOE's decision to limit the scope of the energy conservation standards, in this final rule, to compressors of 10 to 200 nominal hp. In conjunction with the limit of compressor motor nominal horsepower range, DOE also establishes a limit on compressor full-load actual volume flow rate as discussed in section III.B.4.b of this document.

b. Coupling of Compressor Motor Nominal Horsepower and Actual Volume Flow Rate in the Scope Definition

In addition to comments regarding potential horsepower limitations, CAGI and Sullair suggested establishing scope by limiting both compressor motor nominal horsepower and flow. In other words, a compressor would be subject to standards if it falls within either a given horsepower range or within a given flow range (or both). Specifically, CAGI supported an airflow limitation of 35 to 1,250 cfm, inclusive, while Sullair supported an airflow limitation of 30 to 1,250 cfm, inclusive. CAGI reasoned that an airflow range will prevent manufacturers possibly altering horsepower ratings at the margins in order to move compressors out of the scope of energy conservation standards. Sullair expanded upon this reasoning, and commented that a manufacturer may be encouraged to add a nominally larger horsepower motor to circumvent the standards. (CAGI, No. 0052 at p. 9; Sullair, No. 0056 at pp. 9–10, 11–12, 13) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullivan-Palatek, No. 0051 at p. 1)

DOE agrees with CAGI and Sullair that, by not limiting flow rate, manufacturers could conceivably circumvent compressor regulations by using a motor of horsepower slightly greater than 200 hp. For example, two similar compressors, one with a 200 hp motor and one with a 225 hp motor, would supply nearly identical flow rates and pressure (*i.e.,* utility) to the end user; however the one with the 225 hp motor would not be subject to proposed standards or proposed test procedures. In contrast, any alterations in flow rate would directly impact consumer utility.

A review of all available CAGI performance data sheets indicates that the flow rate ranges recommended by CAGI and Sullair are reasonable. The full-load actual volume flow rate range of 35 to 1,250 cfm, inclusive, is slightly broader than the compressor motor nominal horsepower range of 10 to 200 hp; *i.e.,* the flow range encompasses slightly more compressors models. This

[23] DOE notes that in response to the 2012 proposed determination of coverage, NEEA urged DOE to cover compressors <15 hp, stating that this range represented commodity-type compressors purchased without consideration of operating cost and, therefore, offering the opportunity for substantial energy savings. (NEEA, No. 0010 at p. 1) Further, NEEA stated that performance testing in this horsepower range was rare or unreliable. (Docket No. EERE–2012–BT–DET–0033, NEEA, No. 0010 at p. 1) DOE views NEEA's more recent 2016 test procedure NOPR comments as superseding the views presented in response to the 2012 proposed determination of coverage.

aligns with the intent of the recommendations put forth by CAGI and Sullair. Specifically, the full-load actual volume flow rate range of 35 to 1,250 cfm includes 9.2-percent more fixed-speed compressors and 2.9-percent more variable-speed compressors in the scope of the rulemaking.

For the reasons outlined in this section (*i.e.,* reduction of circumvention risk and the reasonable nature of the ranges proposed), in this final rule, DOE adopts a coupled airflow and compressor motor nominal horsepower limit, as recommended by Sullair and CAGI. DOE notes that the recommendations from Sullair and CAGI are not completely aligned, with Sullair recommending a lower limit of 30 cfm and CAGI recommending a lower limit of 35 cfm. Given general support by Ingersoll Rand, Kaeser Compressors, and Sullivan-Palatek for CAGI's recommendations, DOE is adopting the higher limit of 35 cfm. Specifically, energy conservation standards apply to compressors with either a compressor motor nominal horsepower of 10 to 200 hp, or a full-load actual volume flow rate of 35 to 1,250 cfm.

5. Full-Load Operating Pressure

In the energy conservation standards NOPR, DOE proposed to limit the scope of the standard to compressors with full-load operating pressures between 31 psig and 225 psig. DOE chose the proposed full-load operating pressure scope to align with the test procedure NOPR, noting that equipment outside of that pressure range generally represents a low sales volume, specialized equipment type for applications that do not often overlap with what is generally considered in the market to be industrial air. 81 FR 31680, 31693 (May 19, 2016). In the energy conservation standards NOPR, DOE also concluded that isentropic efficiency is approximately invariant with pressure over the pressure range under consideration and, as a result, DOE used data from equipment with full-load operating pressures between 31 and 225 psig to establish efficiency levels for each equipment class. 81 FR 31680, 31705 (May 19, 2016). In the test procedure final rule, DOE restricts the scope of applicability of the test procedure to compressors with full-load operating pressures between 75 and 200 psig. DOE may not establish energy conservation standards for equipment that does not have an established test procedure. For this reason, DOE may only consider energy conservation standards for equipment with full-load operating pressures between 75 and 200 psig in this final rule.

In response to DOE's energy conservation standards proposal, CAGI and Jenny Products commented that a pressure range between 75 and 200 psig is appropriate for the scope of the standard. Jenny Products stated that most air compressors are used in the 80–125 psig range, and that some are used in the 125–175 psig range; therefore a range of 75–200 psig would include almost all commercially available compressors built today. (EERE–2014–BT–TP–0054, Jenny Products, No. 0020 at p. 3) CAGI reasoned that package isentropic efficiency is relatively independent of pressure between 75 and 200 psig, and this range represents the largest segment of the industry. (CAGI, No. 0052 at pp. 9–10) CAGI's statement aligns with its comment on the breakdown of output pressures in the rotary compressors market, which was discussed in the NOPR as:

- Approximately 4.4 to 30 pounds per square inch gauge (psig) (pressure ratio greater than 1.3 and less than or equal to 3.0): The compressors industry generally refers to these products as blowers—a term DOE is considering defining as part of its fans and blowers rulemaking (Docket No. EERE–2013–BT–STD–0006). The majority of these units are typically distributed in commerce as bare compressors and do not include a driver, mechanical equipment, or controls.
- 31 to 79 psig (pressure ratio greater than 3.1 and less than or equal to 6.4): There are relatively few compressed air applications in this pressure range, contributing to both low product shipment volume and low annual energy consumption.
- 80 to 139 psig (pressure ratio greater than 6.4 and less than or equal to 10.5): This range represents the majority of general compressed air applications, shipments, and annual energy use.
- 140 to 215 psig (pressure ratio greater than 10.5 and less than or equal to 15.6): This range represents certain specialized applications, relatively lower sales volumes and annual energy consumption when compared to the 80 to 139 psig rotary compressor segment.
- Greater than 215 psig (pressure ratio greater than 15.6): This range represents even more specialized applications, which require highly engineered rotary compressors that vary based on each application. 81 FR 31680, 31693 (May 19, 2016).

Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

Sullair commented that isentropic efficiency is independent of pressure across the range of 80–200 psig, which is nearly the same as the 75–200 range suggested by Ingersoll Rand, Kaeser Compressors, Sullivan-Palatek, and by Sullair, itself, indirectly in support of CAGI's comments. (Sullair, No. 0056 at p. 15).

Alternatively, Atlas Copco suggested that 80 to 170 psig (7 to 15 bar) [sic] as range where the dependence of isentropic efficiency on outlet pressure is limited, which is in alignment with the limited pressure range covered by the EU Lot 31 draft regulation. (Atlas Copco, No. 0054 at pp. 19–20) However, DOE believes that Atlas Copco's unit conversions were inaccurate and thus, the suggested range does not align with the scope proposed in the EU Lot 31 draft regulation. Based these ambiguities, DOE cannot directly consider Atlas Copco's recommendation when considering the range where package isentropic efficiency can be considered independent of full-load operating pressure. For this reason, DOE defers to the recommendation of CAGI, Ingersoll Rand, Sullivan-Palatek, and Sullair, and concludes that package isentropic is relatively independent of full-load operating pressure at full-load operating pressures between 75 and 200 psig.

As a result, in this final rule, DOE is establishing the broadest scope of applicability of standards that is possible, under the current test procedure, *i.e.* a full-load operating pressure of 75 to 200 psig.

6. Lubricant Presence

In the energy conservation standards NOPR, DOE proposed to include lubricant-free compressors in the scope of the standards. However, DOE recognized differences in design, efficiency, cost, and utility for lubricant-free compressors when establishing separate equipment classes for compressors based on lubricant presence. 81 FR 31680, 31698 (May 19, 2016). DOE proposed, in the energy conservation standards NOPR, a ''new standards at baseline'' standard for lubricant-free compressors. This baseline would not have resulted in national energy savings, as reflected in the national impact analysis (''NIA''), but would have prevented potential new, less efficient equipment from the entering the market and potentially

increasing future national energy consumption. 81 FR 31680, 31736.

In the test procedure final rule, DOE excludes lubricant-free compressors from the scope of test procedures based on three general reasons: (1) The lack of applicability of the test method and metric proposed in the test procedure NOPR; (2) the desire to retain the opportunity to harmonize with the European Union regulatory process for the benefit of manufacturers and consumers; and (3) to avoid creating an incentive to substitute unregulated technologies (such as dynamic) for regulated lubricant-free compressors.

Because there is no test procedure for lubricant-free compressors, DOE cannot consider energy conservation standards for this equipment, in this final rule. DOE is making no determination of the technological feasibility or economic justification of potential standards for lubricant-free compressors in this final rule. DOE may evaluate standards for lubricant-free compressors in the future, if an appropriate test procedure can be developed.

Although DOE is unable to consider energy conversation standards for lubricant-free compressors, at this time, the following subsections summarize relevant interested party comments. DOE may consider these comments if it chooses to pursue energy conservations for lubricant-free equipment in the future. In reviewing the comments, DOE observed that comments tended to fall into one of three groups. One group of comments focused on a lack of available performance data to inform the establishment of a standard. A second group focused on a possible unfair advantage conferred to substitute products outside of DOE's scope of standards. The final group of comments focused on the benefits of harmonizing standards with those proposed in the European Union.

Scarcity of Data

In response to the energy conservation standards NOPR, ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE noted that lubricant-free compressors serve specialized applications and are less common, which makes establishing a standard difficult in the absence of data. However, ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE suggested that DOE include lubricant-free compressors within the scope of the final rule, as the data gathered to certify these compressors will provide useful information for future rulemakings. To balance those two considerations, ASAP, ACEEE, NEEA, NRDC, NEEP and ASE suggested setting the energy conservation standards for lubricant-free compressors at efficiency level zero. (ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at p. 4)

Kaeser Compressors and Sullair also commented that there were a limited number of data points available for lubricant-free compressors, with Sullair commenting that there are few manufacturers of this type of equipment that participate in the CAGI Performance Verification Program. Kaeser Compressors further stated that the lack of data makes the regression curves for the efficiency levels look possibly inaccurate toward the lower end of the covered airflow range, and that it preferred to wait until the EU finishes its assessment of lubricant-free compressors. (Kaeser Compressors, No. 0053 at p. 1; Kaeser Compressors, Public Meeting Transcript, No. 0044 at pp. 56–57; Sullair, Public Meeting Transcript, No. 0044 at pp. 31–32)

CAGI commented that DOE should exclude lubricant-free compressors in the scope of the final rule due to the limited compressor performance data available to inform a standard. (CAGI, No. 0052 at p. 12) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

Substitution Incentive

CAGI commented that DOE should exclude lubricant-free compressors in the scope of the final rule in order to reduce risk of product substitution to unregulated technologies, such as dynamic compressors above a compressor motor nominal horsepower of 150 hp. (CAGI, No. 0052 at p. 12) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek supported CAGI's comments. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

Harmonization With European Union

Ingersoll Rand commented that DOE should consider waiting to revise the efficiency levels for lubricant-free compressors until the draft EU standards for lubricant-free compressors are published. Ingersoll Rand also stated, however, that it did not oppose efficiency level zero, which DOE proposed in the energy conservation standards NOPR. (Ingersoll Rand, No. 0055 at p. 4)

CAGI also commented that DOE should exclude lubricant-free compressors in the scope of the final rule in order to preserve opportunity to align with EU once the EU establishes standards for lubricant-free compressors. (CAGI, No. 0052 at p. 12) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek supported CAGI's comments. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

Conclusion

As noted earlier in this section, DOE is not adopting standards for lubricant-free compressors because no test procedure exists. DOE is making no determination of the technological feasibility or economic justification of potential standards for lubricant-free compressors in this final rule. DOE may evaluate standards for lubricant-free compressors in a future rule.

7. Water-Injected Compressors

DOE is aware that some compressors inject water into the compression chamber, in place of oil or other lubricants, in order to avoid risk of air contamination and to serve applications that require inherently clean air. In the energy conservation standards NOPR, DOE proposed to define ''lubricated compressor'' as ''a compressor that introduces an auxiliary substance into the compression chamber during compression'' and ''auxiliary substance'' as ''any substance deliberately introduced into a compression process to aid in compression of a gas by any of the following: Lubricating, sealing mechanical clearances, or absorbing heat.'' In the energy conservation standards NOPR, DOE interpreted water to be an auxiliary substance. 81 FR 31680, 31698 (May 19, 2016).[24] Consequently, water-injected compressors would be classified as lubricated compressors.

In response to the energy conservation standards NOPR, Jenny Products commented that water screw compressors (also known as ''water injected compressors'') are quite different from the compressors mentioned in the energy conservation standards NOPR proposal, and that DOE's proposed standard attempt to lump too many compressors into a one size fits all model. (Jenny Products, No. 0058 at p. 2). Sullivan-Palatek also cited water screw compressors as an example

[24] This definition was adopted, unchanged, in the test procedure final rule.

of specialized technology that could be eliminated from the market if grouped with other lubricated compressors. Beyond these comments, DOE did not receive any specific evidence or data supporting the inclusion or exclusion of water-injected compressors.

DOE performed research to better understand water-injected compressor technology and determine whether water-injection both provides consumer utility and inhibits the ability to reach higher efficiency levels.

Water-injected compressors operate similarly to conventional (*i.e.,* oil or synthetic oil) lubricated compressors in that they introduce a liquid into the compression chamber to lubricate moving parts, seal mechanical clearances against the egress of air, and absorb heat. DOE understands the chief consumer utility of using water, in place of an oil- or synthetic oil-based auxiliary substance, is freedom from risk of output air contamination. Failure of a filter or other downstream oil removal apparatus does not permit oil to become present in the delivered air as no oil is present in the system. However, water and vapor are present and require removal. Because of the similar utility of an inherently oil-free process, water-injected compressors more often compete with lubricant-free compressors rather than lubricated compressors.

A limitation of replacing oil with water is that water tends to be more corrosive to many types of metals commonly used to constructed compressors. This is particularly true if the water contains trace quantities of minerals, as does any water drawn from the environment or public water supply. To reduce corrosion, water-injected compressors employ advanced filtration (commonly, reverse osmosis) to create highly purified water for introduction into the compression process. The advanced filtration systems used by water-injected compressors may add nontrivial energy consumption to a compressor package and ultimately reduce efficiency. Reverse osmosis systems typically require creation of large pressure gradients and several stages of filtration. The filtration systems may also contain elements to eliminate biological agents, of particular concern in medical applications.

Even with advanced filtration systems, water-injected compressors may require the use of more corrosion-resistant materials for any componentry downstream of the water injection site. These materials may be less resistant to mechanical deformation and exhibit diminished lifespan relative to conventional construction materials. As a result, designers tend to open mechanical clearances, as compared with conventionally lubricated compressors, in anticipation of mechanical deformation associated with less durable materials used to resist corrosion. Wider clearances allow more air leakage during operation, and ultimately reduce efficiency.

These modifications that alter efficiency—filtration, corrosion-resistant material, altered geometry—are also likely to add cost to a water-injected compressor, relative to a conventionally lubricated compressor of similar specification.

With respect to market share, DOE knows of only three manufacturers currently offering water-injected compressors in the United States market,[25] and DOE believes that shipments of water-injected compressors are very low, as compared to oil- or synthetic oil-injected compressors. As a result, DOE expects energy savings associated with water-injected compressors to be minimal.

In conclusion, DOE's research indicates that water-injected compressors may provide additional end user utility, but with reduced ability to meet higher efficiency levels. As a result, water-injected compressors may warrant a separate equipment class from lubricated compressors. However, because no performance data is available to characterize water-injected compressors, DOE has no basis to establish a standard. As a result, DOE excludes water-injected compressors from the scope of this final rule. To clearly establish what is meant by the term, DOE is adopting a definition in this final rule. ''Water-injected compressor'' means ''a lubricated compressor that uses injected water as an auxiliary substance.''

8. Specialty Purpose Compressors

In the energy conservation standards NOPR, DOE did not explicitly exclude any categories of specialty compressors. DOE made no specific scope exclusion for what the compressor industry refers to as ''customized'' or ''specialty-purpose'' compressors. 81 FR 31680, 31690, 31693, 31696 (May 19, 2016). Although specialty compressors were not explicitly excluded, DOE expects that many would be effectively excluded by other scope limitations, including full-load operating pressure, compression principle, variety of gas compressed, capacity, driver variety, and lubricant presence.

[25] Sullivan-Palatek, Atlas Copco, and CompAir (a brand of Gardner Denver).

DOE received comments with respect to customized and specialty-purpose compressors; generally, many commenters recommended that DOE expressly exclude customized and specialty-purpose compressors from the scope of the test procedure and energy conservation standards. Commenters provided information on what they viewed as customized and specialty-purpose compressors, as well as rationale for their suggestions. In section III.B.8.a, DOE discusses comments related to compliance burden. In sections III.B.8.b through III.B.8.d, DOE summarizes the remaining comments by topic. In section III.B.8.e, DOE provides a response to the comments discussed in sections III.B.8.b through III.B.8.d.

a. Compliance Burden

Atlas Copco and Sullair objected to the inclusion of customized compressors due to the burden of compliance for these low-volume units and noted that the customer modifications affect efficiency. Atlas Copco suggested use of a *de minimis* exception for low-volume compressors that would exclude them from the test procedure and energy conservation standard. (Atlas Copco, No. 0054 at pp. 14–15; Sullair, No. 0056 at p. 7)

The DOE test procedure allows manufacturers to use a testing-based sampling plan or AEDMs to determine the performance of a compressor. Manufacturers can use AEDMs to model the performance of compressors with lower sales volumes based on compressors with higher sales volumes, thereby reducing the burden of testing. DOE discusses and estimates all costs related to compliance with this final rule in section IV.J.

b. Limited Data

Jenny Products commented that specialty equipment was not addressed in the energy conservation standards NOPR and that limited data is available for this equipment. (Jenny Products, No. 0058 at p. 2) Sullivan-Palatek argued that specialty compressors rarely publish data sheets, and as a result, that DOE's proposed energy conservation standards do not reflect the existence of specialized compressors. (Sullivan-Palatek, No. 0051 at pp. 4–5; EERE–2014–BT–TP–0054, Sullivan-Palatek, Public Meeting Transcript, No. 0016 at p. 115; EERE–2014–BT–TP–0054, Sullivan-Palatek, No. 0007 at p. 2)

Similarly, Sullair commented that the data used to form the efficiency levels proposed by DOE does not contain data from custom units and will drop the overall efficiency of the compressor population. (Sullair, Public Meeting

Transcript, No. 0044 at p. 49) Sullair stated that the options for customized compressors (which are more frequently larger air compressors over 200 hp) are modifications that impact the compressor package efficiency but are required by the customer for use in a specific application. (Sullair, No. 0056 at p. 6)

c. Inability To Reach Higher Efficiency Levels

Sullivan-Palatek objected to the inclusion of special, custom, or low-volume models in the scope of energy conservation standards. (Sullivan-Palatek, No. 0051 at p. 5) Sullivan-Palatek argued that the number of product classes is too limited to reflect the variety of compressed air products, leading to an oversimplified standard that could make specialty products illegal and thus limit the number of configurations that can be offered to customers for hazardous duty or special weather applications. (Sullivan-Palatek, No. 0051 at p. 4) Castair commented that the proposed regulations will limit the customization of compressors for unique applications, which primarily affects small businesses. (Castair, No. 0045 at p. 1; EERE–2014–BT–TP–0054, Castair, No. 0018 at p. 1)

d. Examples of Specialties

CAGI provided examples of specific specializations, such as hazardous locations, breathing air, marine environments, ambient conditions above 45 degrees C or below 0 degrees C, and weather protection. (CAGI, No. 0052 at p. 8; Docket No. EERE–2014–BT–TP–0054, CAGI, No. 0010, p. 4) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

Sullair agreed with CAGI's recommendation and provided additional examples of custom requirements, such as hazardous locations or corrosive environments (such as standards set by Atmosphères Explosibles [''ATEX''],[26] the American Petroleum Institute [''API''], the Mine Safety and Health Administration [''MSHA''], etc.), marine environments (*e.g.,* American Bureau of Shipping [''ABS'']), alternate cooling methods (remote coolers, water-cooled, closed-loop cooling, etc.), ambient conditions exceeding 45 °C, ambient conditions below 5 °C, energy or heat recovery options, environmental protections (such as standards set by the National Electrical Manufacturers Association [''NEMA''], the International Electrotechnical Commission [''IEC''], etc.), and dimensional changes or enclosure modifications. (Sullair, No. 0056 at p. 7; Docket No. EERE–2014–BT–TP–0054, Sullair, No. 0006 at p. 8) Sullair noted that sump heating, extra fans, and special marine applications where motors have to be built for ABS applications may increase energy consumption of the package. (Docket No. EERE–2014–BT–TP–0054, Sullair, Public Meeting Transcript, No. 0016 at p. 113) DOE considered the suggested industry standards in evaluating whether a particular specialty application warranted exclusion from energy conservation standards, and discusses the details in section III.B.8.e.

Jenny Products provided examples of specialty applications, such as explosion-proof applications, weather-proof applications, dental applications, and climate-control applications. (Jenny Products, No. 0058 at p. 2)

Sullivan-Palatek commented that compressor products usually start with the basic package, but often substitute nonstandard electric motors, controls or coolers along with adding numerous other options and features specified by the customer or required by the location where the compressor is installed. (Docket No. EERE–2014–BT–TP–0054, Sullivan-Palatek, No. 0007 at p. 2)

Atlas Copco provided examples of custom equipment, including customized liquid cooling systems, drive systems, safety systems, filtration systems, dryers, heaters, and air receiver/surge tanks. Atlas Copco also noted that each type of customization can have a significant impact on the energy efficiency of the total compressor system. (Docket No. EERE–2014–BT–TP–0054, Atlas Copco, No. 0009 at pp. 4–5)

e. Response to Comments

As discussed in the test procedure final rule, DOE incorporates CAGI's recommended list of equipment (with certain modifications) to define the minimum testing configuration for a compressor basic model. Consequently, customized or specialty-purpose equipment that is created by adding additional equipment to what the industry refers to as a standard or basic package compressor, would be tested without the additional equipment, and achieve the same rating as the basic package compressor it was derived from. For this reason, DOE finds no reason to expressly exclude from scope, any compressors that are created by adding additional equipment to the basic testing configuration specified in the test procedure.

Based on DOE's interpretation of interested party comments, two additional concerns remain: (1) Specialty-purpose equipment that is created by *modifying* or *replacing* equipment on a standard package compressor, and (2) specialty-purpose equipment that is not derivative of other standard equipment. However, DOE notes that interested parties did not provide specific examples of specialty-purpose compressors models (*i.e.,* basic models) that have been distributed into commerce, nor did they provide any direct or quantitative evidence that such compressors consume more energy and are more burdensome to certify than their ''general-purpose'' counterparts (beyond noting that more models may need to be certified). Regardless, given the interested party concerns, DOE performed research (using interested party comments as a starting point) to determine if any additional scope exclusions are warranted. Specifically, DOE was able to identify 11 applications and feature categories that could possibly be used to characterize specialty-purpose compressors in the compressor industry:

(1) Corrosive Environments
(2) Hazardous Environments
(3) Extreme Temperatures
(4) Marine Environments
(5) Weather-protected
(6) Mining Environments
(7) Military Applications
(8) Food Service Applications
(9) Medical Air Applications (including dental)
(10) Climate-control Applications
(11) Petroleum, Gas, and Chemical Applications

Given the concerns raised by commenters, DOE established three criteria to help determine if exclusions are warranted for each of the aforementioned applications and feature categories. A compressor category must meet all three criteria to be considered for exclusion. The criteria are distinguishability, consumer utility, and material disadvantage.

The first criterion, distinguishability, is that compressors under consideration must be able to be distinguished from general-purpose compressors. In this case, to be distinguishable extends beyond being able to identify any

[26] ATEX is the common industry phrasing for European Parliament and Council Directive 2014/34/EU of 26 February 2014, which governs equipment and protective systems intended for use in potentially explosive atmospheres. The term ''ATEX'' is a portmanteau of ''atmosphères explosibles'', French for ''explosive atmospheres.''

difference whatsoever. Specifically, distinguishability is determined in the context of the test procedure. DOE's test procedure final rule contains instructions regarding compressor configuration during testing. During a test, only specific, enumerated ancillary equipment is required to be connected to the compressor; manufacturers may remove non-required ancillary equipment if they chose to do so. If the specialized nature of a compressor arises from a non-required component of ancillary equipment, manufacturers have the option to remove its influence on compressor performance. In that scenario, the specialty compressor, from the perspective of the test procedure, has ''collapsed'' to a general-purpose unit with no remaining distinction. In considering whether a compressor meets the distinguishability criterion, DOE will assess whether the specialized nature of the compressor arises from ancillary equipment or configurations that would vanish under the specific provisions of DOE's test.

As stated previously, DOE is incorporating CAGI's recommended list of equipment (with certain modifications), so the only specialty-purpose compressors that could warrant exclusion are (1) those that are created by modifying or replacing equipment on a standard package compressor, and (2) specialty-purpose equipment that is not derivative of other standard equipment.

The second criterion, consumer utility, is that the specialty compressor must offer clear and unique utility to the end-user. If the specialty compressor can be easily substituted for a general-purpose compressor without significant consequence, unique consumer utility is not supplied. The criterion is also important for ensuring that exclusion would not create a substitution incentive for consumers to switch to non-regulated specialty equipment, as a means to reduce first-cost.

The final criterion, material disadvantage, is that a manufacturer must face greater difficulty, in some regard, in increasing the efficiency of the specialty compressors in question relative to general-purpose compressors. For example, due to extra componentry required to serve a specialty application, a specialty compressor manufacturer may face greater obstacles to improving efficiency than would a general-purpose compressor manufacturer. Alternatively, a compressor may be able to achieve greater efficiency without trouble but create some disproportionate burden to manufacturers, for example in testing or demonstrating compliance.

DOE performed research, using publicly available data, on each of the categories to determine if exclusions are warranted. In the following paragraphs, DOE discusses findings for each of the aforementioned 11 specialty applications.

Corrosive Environments

Corrosive environments can be damaging to both the external components of a compressor and the internal components, if corrosive agents are ingested with the air. DOE's research indicated that corrosive agents are found in wide range of varieties and severities. Certain corrosive agents may harm some materials but not others.

Compressors may be adapted to corrosive environments by using special materials, having special coatings, using additional intake air filtration, or using special or remote enclosures to isolate the compressor from the corrosive environment. However, most requirements for corrosive environments are customer-specific, making it difficult to create a generalized scope exclusion. Some end users also use general-purpose compressors in a corrosive environment, opting to replace the compressor at an earlier interval instead of purchasing a more expensive compressor that can last longer in the corrosive environment.

Based on this information, DOE does not believe that all corrosive environment compressors meet the first criterion of distinguishability; however, certain corrosive environment compressors utilizing special materials and/or coatings may be distinguishable.

DOE did find that certain corrosive environment compressors meet the second criterion of consumer utility. Although some consumers opt to simply replace compressors more frequently, this may be impractical in locations for which frequent replacement is impractical (*e.g.,* a remote location) or for which downtime is intolerable. Further, some corrosive agents may significantly accelerate wear. As a result, measures employed to avert corrosive agents or resist their effect can be said to grant utility.

DOE does not find that such compressors meet the third criterion of material disadvantage. DOE was unable to find evidence that most compressors suited to corrosive environments would generally face disproportionate difficulty in reaching the same efficiency levels as general-purpose compressors. Specifically, DOE was unable to find evidence that identifiable components, such as special materials and coatings, affect efficiency. As a result, DOE does not find sufficient evidence that compressors suited to corrosive environments face disproportionate difficulty in reaching the same efficiency levels as general-purpose compressors. Furthermore, DOE found no evidence suggesting corrosive environment compressors would be subject to disproportionate burden in testing or demonstrating compliance.

Because corrosive environment compressors do not meet the criteria of distinguishability and material disadvantage, DOE does not exclude them from the scope of this final rule.

Hazardous Environments

Hazardous environments include those in which there is the possibility of combustion or explosion. Compressors may be adapted to hazardous environments through modified electrical components and enclosures that protect against sparks and high temperatures. At least some of these components would need to be included as part of the basic package during testing. Several standards specify the type and level of precautions required for these environments, so certification with one or more of these could be a method for defining the scope of exclusion.

For these reasons, DOE finds that hazardous environment compressors to meet the first criterion of distinguishability. Hazardous environment compressors in the United States are designated as such by independent agencies such as UL, and given a rating that corresponds to the specific attributes of the hazardous environment for which the unit is being certified. Independent agencies, such as UL, certify that compressors are suitable for hazardous environments against the National Electrical Code (''NEC''), which is the common term for the National Fire Protection Association using a system of classes, zones, and groups of hazardous materials for which the equipment is being rated safe. DOE examined standards set by Atmosphères Explosibles [''ATEX''],[27] but found that this designation is predominantly used in the European market and largely overlaps, in terms of the information it conveys to the consumer, with the NFPA 70 rating system.

DOE also found that hazardous environment compressors meet the second criterion of consumer utility. Using non-explosion-safe equipment, in

[27] ATEX is the common industry phrasing for European Parliament and Council Directive 2014/34/EU of 26 February 2014, which governs equipment and protective systems intended for use in potentially explosive atmospheres. The term ''ATEX'' is a portmanteau of ''atmosphères explosibles'', French for ''explosive atmospheres.''

hazardous environments, can create profound risk to life and property.

However, DOE does not find that hazardous environment compressor meet the third criterion of material disadvantage. DOE was unable to find evidence that compressors suited to hazardous environments would face disproportionate difficulty in reaching the same efficiency levels as general-purpose compressors. DOE believes that the modified electrical components and enclosures used in hazardous environments have little impact on energy use. Additionally, DOE found no evidence suggesting hazardous environment compressors would be subject to disproportionate burden in testing or demonstrating compliance.

Because hazardous environment compressors do not meet the criterion of material disadvantage, DOE does not exclude them from the scope of this final rule.

Extreme Temperatures

CAGI and Sullair identified the need to exclude compressors used in extreme temperatures. (CAGI, No. 0010, p. 4; Sullair, No. 0006 at p. 8) For high extremes, both commenters identified temperatures above 45 °C. For low extremes, Sullair indicated temperatures below 5 °C, while CAGI indicated temperatures below 0 °C. DOE notes that CAGI and Sullair did not present any standardized tests or inspections that might be used to uniformly classify the acceptable temperature range for a compressor.

In the absence of that information, DOE performed research and found neither industry-accepted, standardized test methods to determine allowable operating temperature, nor any industry-accepted certification programs to classify compressors for extreme temperatures. DOE also researched what types of modification and components might be employed to adapt compressors for extremely high- and low-temperature environments. For lower temperatures, a variety of heating devices may be used to heat the compressor package in various ways—such equipment would not be required as a part of test procedure testing configuration and is, therefore, not a distinguishing feature.

In hotter environments, compressors may employ larger output air heat exchangers and associated fans. Unlike package heating and cooling, heat exchangers and fans would necessarily be part of the test configuration. However, manufacturers may employ larger heat exchangers and fans for a variety of reasons, *e.g.,* recovering waste heat for use in space heating. Furthermore, heat exchanger and fan size (as compared to compressor capacity) is not a standardized feature across the compressor industry, with different manufacturers choosing different-sized components to meet their specific design goals. Consequently, DOE is unable to establish a clear threshold to delineate larger heat exchangers and fans employed for high temperature applications. Furthermore, doing so would open a significant circumvention risk, as manufacturers could purposely substitute larger heat exchangers and fans in order to exclude compressors from regulation. For these reasons, DOE concludes that compressors designed for extreme temperature operation are not clearly distinguishable from general-purpose compressors.

Due to the difficulty in distinguishing compressors designed for extreme temperature operation from general-purpose compressors, DOE could not determine whether compressors designed for extreme temperature operation meet the second criterion of consumer utility, or the third criterion of material disadvantage. DOE adds that if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor provides clear and unique utility to the end user that a general-purpose compressor would not provide. Similarly, if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor has a material disadvantage compared to a general-purpose compressor. Consequently, DOE is unable to exclude these compressors from the scope of this final rule.

Marine Environments

Marine air compressors are intended for use aboard ships, offshore platforms, and similar environments. In general, DOE found this to be a very broad category of compressors. There are a wide variety of standards for these applications, but many of the requirements are customer-specific, making it difficult to clearly identify the scope for exclusion. Marine compressors may be space constrained if installed on ships. However, this may not always be the case, and some marine environments may be able to utilize general-purpose compressors. Further, DOE found no way to distinguish clearly, from general-purpose compressors, those compressors specifically developed for constrained spaces. DOE's research found that other items, such as saltwater coolers, may be employed with marine air compressors, however, this equipment would not need to be included for testing. For these reasons, DOE does not find marine environment compressors to meet the first criterion of distinguishability.

Due to the difficulty in distinguishing marine environment compressors from general-purpose compressors, DOE could not determine whether marine environment compressors meet the second criterion of consumer utility, or the third criterion of material disadvantage. DOE adds that if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor provides clear and unique utility to the end user that a general-purpose compressor would not provide. Similarly, if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor has a material disadvantage compared to a general-purpose compressor. Because marine environment compressors do not meet the first criteria for consideration of exclusion, DOE does not exclude them from the scope of this final rule.

Weather-Protected

Weather-protected compressors require features to prevent the ingress of water and debris, as well as accommodation for extreme temperatures in some cases. Design accommodations related to extreme temperatures are discussed in that eponymous subsection of III.B.8.e and, therefore, the scope of this section is confined to those design accommodations related to aspects of weather-protection for reasons other than extreme temperature. DOE found that third-party standards exist for ingress protection of the electrical components. However, DOE could find no indication of a standard or certification for other aspects of weather protection, making it difficult to clearly identify a general scope for exclusion for all weather-protected equipment. However, DOE believes that certain weather-protected compressors (*i.e.,* those with electrical components rated for ingress protection) meet the first criterion of distinguishability.

Similarly, DOE believes that certain weather-protected compressors (*i.e.,* those with electrical components rated for ingress protection) meet the second criterion of consumer utility, as such equipment is designed to operate in environments where non-rated equipment cannot.

However, DOE does not find that weather-protected compressors meet the third criterion of material disadvantage. Most weather-protected compressors would generally not face disproportionate difficulty in reaching the same efficiency levels as general-purpose compressors. Some components added for weather protection, such as special electrical components, have little impact on energy use. As a result, DOE does not find evidence to suggest that weather-protected compressors face disproportionate difficulty in reaching the same efficiency levels as general-purpose compressors. DOE found no evidence suggesting weather-protected compressors would be subject to disproportionate burden in demonstrating compliance.

Because weather-protected compressors do not meet the third criteria for exclusion, DOE does not exclude them from the scope of this final rule.

Mining Environments

Mining environments can include both surface and subsurface mine compressor applications. There are some industry standards for these applications, for example those developed by the MSHA. However, DOE did not locate any which could be used to reliably designate compressors for mining environments. Furthermore, many of the design requirements for mining environment compressors are customer-specific, making it difficult to clearly identify the scope for exclusion. Some mining applications also use general-purpose compressors. For this reason, DOE does not find mining environment compressors to meet the first criterion of distinguishability. DOE was not able to determine that compressors for mining environments are always distinguishable from general-purpose compressors. There is no universally recognized designator.

Due to the difficulty in distinguishing mining environment compressors from general-purpose compressors, DOE could not determine whether mining environment compressors meet the second criterion of consumer utility, or the third criterion of material disadvantage. DOE adds that if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor provides clear and unique utility to the end user that a general-purpose compressor would not provide. Similarly, if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor has a material disadvantage compared to a general-purpose compressor.

Ultimately, because mining environment compressors do not meet the first criteria for consideration of exclusion, DOE does not exclude them from the scope of this final rule.

Military Applications

Compressors used in military applications have a wide range of applications. Many military applications use common commercial or industrial compressors. Other military applications, however, must meet extensive customer-specific requirements. These requirements can vary greatly with the customer, and there are no commonly used standards for compressors in military applications. This makes it difficult to clearly identify the scope for exclusion. For this reason, DOE does not find military compressors to meet the first criterion of distinguishability.

Due to the difficulty in distinguishing military compressors from general-purpose compressors, DOE could not determine whether military compressors meet the second criterion of consumer utility, or the third criterion of material disadvantage. DOE adds that if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor provides clear and unique utility to the end user that a general-purpose compressor would not provide. Similarly, if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor has a material disadvantage compared to a general-purpose compressor.

Ultimately, because military compressors do not meet the first criteria for consideration of exclusion, DOE does not exclude them from the scope of this final rule.

Food Service Applications

Food service applications can have requirements for air purity and for the use of food-grade lubricants. Food grade lubricants would need to be included for testing, so at least some compressors designed for food service applications would meet the first criterion of distinguishability.

DOE found that food service application compressors also met the second criterion of consumer utility. Without food grade lubricants, compressors would not be permitted to be used in food processing environments.

DOE does not find that food service application compressors meet the third criterion of material disadvantage. DOE found no evidence that food-grade lubricants, would impact efficiency. As a result, DOE does not find evidence to suggest that food service compressors face disproportionate difficulty in reaching the same efficiency levels as general-purpose compressors.

Because food service applications compressors do not meet the third criterion of material disadvantage, DOE does not exclude them from the scope of this final rule.

Medical Air Applications

Medical air applications can have requirements for air purity, which is rated according to ISO 8573–1,[28] and also included in the National Fire Protection Association Standard for Health Care Facilities (NFPA 99).[29] DOE notes that most medical air compressors are lubricant-free; as such, any lubricant-free medical air compressors are already excluded from this final rule. In lubricated compressors, high air purity is attained using a combination of filters and dryers added to the system after the compressor. These items are outside the basic compressor package, so a medical air compressor would collapse to a standard basic package for testing. For this reason, DOE does not find medical air application compressors to meet the first criterion of distinguishability.

Due to the difficulty in distinguishing medical air compressors from general-purpose compressors, DOE could not determine whether medical air compressors meet the second criterion of consumer utility, or the third criterion of material disadvantage. DOE adds that if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor provides clear and unique utility to the end user that a general-purpose compressor would not provide. Similarly, if a specialty purpose compressor fails to meet the first criterion of distinguishability, then it is unlikely that the specialty purpose compressor has a material disadvantage compared to a general-purpose compressor.

Ultimately, because medical air compressors do not meet the first criteria for consideration of exclusion,

[28] See: *www.iso.org/iso/catalogue_detail.htm?csnumber=46418.*

[29] See: *www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=99.*

DOE does not exclude them from the scope of this final rule.

Climate-Control Applications

As noted in section III.B.8.d, Jenny Compressors argued that DOE should exclude climate control compressors. (Jenny Products, No. 0058 at p. 2) DOE reviewed available information for climate-control compressors and found that the most commonly advertised unique feature was an ''oil carryover'' of less than or equal to 2 parts per million (''ppm'').[30] DOE knows of one established standard for measurement of air purity, ISO 8573–1.[31] However, this standard expresses oil content using mg/m^3, and would require conversion to ppm.

DOE reviewed compressors that are currently available for sale and marketed for climate-control applications. DOE found that all compressors currently listed as being for ''climate-control'' are reciprocating compressors. Because reciprocating compressors are not within the scope of this energy conservation standards rulemaking, DOE finds no reason to exclude climate-control compressors from this rulemaking.

Petroleum, Gas, and Chemical Applications

The American Petroleum Institute standard 619, ''Rotary-Type Positive-Displacement Compressors for Petroleum, Petrochemical, and Natural Gas Industries,'' (API 619) [32] specifies certain minimum requirements for compressors used in the petroleum, gas, and chemical industry. While API 619 contains many specific design requirements, it also indicates that customers must specify many design requirements themselves. As a result, compressors designed to meet API 619 requirements are not uniform; rather, they are, by definition, customized compressors. In addition to the design requirements, API 619 imposes rigorous testing, data reporting, and data retention requirements on manufacturers. For example, manufacturers are required to perform specific hydrostatic and operational mechanical vibration testing on each individual unit distributed in commerce. Furthermore, manufacturers must retain certain data for at least 20 years, such as certification of materials, test data and results, records of all heat treatment, results of quality control tests and inspections, and details of all repairs. Based on these testing, data reporting, and data retention requirements, DOE concludes that compressors designed and tested to the requirements of API 619 meet the first criterion of distinguishability. Specifically, DOE concludes that any manufacturer claiming a potential exclusion from energy conservation standards would be able to furnish test data proving that the compressor was designed and tested to API 619 (and associated customer-specific) requirements.

Based on DOE's assessment of API 619, DOE believes that the minimum design and testing requirements specified in API 619 are created to achieve, among other goals, safety and reliability in the petroleum, gas, and chemical industry. These requirements ensure that the compressor can be operated and maintained safely, in the safety-critical petroleum, gas, and chemical industry. Consequently, DOE concludes that compressors tested to, and meeting minimum design requirements of API 619 provide additional consumer utility.

At this time, DOE has insufficient evidence to conclusively determine if compressors meeting the minimum design and testing requirements specified in API 619 are at a material disadvantage, with respect to achievable compressors efficiency. However, given the role of API 619 in ensuring operational safety in the petroleum, gas, and chemical industry, DOE believes it is appropriate to exclude from the scope of energy conservation standards compressors meeting the minimum design and testing requirements specified in API 619. In other words, DOE finds that including compressors meeting the minimum design and testing requirements specified in API 619 may have adverse impacts on health or safety.

Furthermore, DOE believes that excluding compressors meeting the minimum design and testing requirements specified in API 619 will not create an appreciable risk of API 619 compressors being used in general purpose applications, due to the rigorous and burdensome requirements associated with complying with API 619. DOE may request that a manufacturer provide DOE with copies of the original design and test data that were submitted in accordance with the requirements of API 619 as evidence that the compressor is designed and tested to API 619.

C. Test Procedure and Metric

This section discusses DOE's requirements with respect to test procedures and summarizes the test procedure for compressors adopted by DOE. EPCA sets forth generally applicable criteria and procedures for DOE's adoption and amendment of test procedures. (42 U.S.C. 6314) Manufacturers of covered equipment must use these test procedures to certify to DOE that their equipment complies with energy conservation standards and to quantify the efficiency of their equipment. (42 U.S.C. 6295(s), 42 U.S.C. 6316(a) and 42 U.S.C. 6314(d)).

On May 5, 2016, DOE issued a notice of proposed rulemaking, to propose test procedures for certain compressors. 87 FR 27220. On June 20, 2016, DOE held a public meeting to discuss the test procedure NOPR and accept comments from interested parties. In December 2016, DOE issued a test procedure Final Rule, which establishes definitions, materials incorporated by reference, and test procedures for determining the energy efficiency of certain varieties of compressors in subpart T of Title 10 of the Code of Federal Regulations, Part 431 (10 CFR part 431). The test procedure Final Rule also amends 10 CFR part 429 to establish sampling plans, representations requirements, and enforcement provisions for certain compressors.

In the test procedure final rule, DOE prescribes a test procedure for measuring the full- and part-load package isentropic efficiency for certain varieties of rotary compressors. The test procedure final rule is applicable to compressors that meet the following criteria:

- are air compressors;
- are rotary compressors;
- are not liquid ring compressors;
- are driven by a brushless electric motor;
- are lubricated compressors;
- have a full-load operating pressure of 75–200 psig;
- are not designed and tested to the requirements of The American Petroleum Institute standard 619, ''Rotary-Type Positive-Displacement Compressors for Petroleum, Petrochemical, and Natural Gas Industries;'' and
- have a capacity that is either:
  - 10–200 compressor motor nominal horsepower (hp), or

[30] Gardner Denver: *www.gardnerdenver.com/gdproducts/compressors/reciprocating/climate-control-low-pressure-reciprocating-compressors/#9816.*

Quincy: *www.aavsales.com/pdfs/ClimateControl-Quincy.pdf.*

Champion: *www.championpneumatic.com/assets/0/176/184/468/488/6ffebc83-bd76-463c-9ebb-bce58e1489d7.pdf.*

CPR: *www.cprindustries.com/climate-control-compressors.html.*

[31] See: *www.iso.org/iso/catalogue_detail.htm?csnumber=46418.*

[32] Available for purchase at: *www.techstreet.com/standards/api-std-619?product_id=1757746.*

○ 35–1,250 full-load actual volume flow rate (cfm).

For those applicable varieties of compressors, DOE prescribes methods to measure and calculate part- and full-load package isentropic efficiency by incorporating by reference sections of ISO 1217:2009(E), (ISO 1217:2009(E)), ''Displacement compressors—Acceptance tests,'' as amended through ISO 1217:2009(E)/Amd.1:2016.[33] DOE also provides additional testing instructions not included in ISO 1217:2009(E) in the test procedure final rule.

Full-load package isentropic efficiency is applicable to fixed-speed compressors, and calculated per section 3.6.1 of ISO 1217:2009(E). It is the ratio of isentropic power required for compression to real packaged compressor power input (both at full-load operating pressure and full-load actual volume flow rate). The test procedure final rule provides complete instructions on measuring and calculating each of these variables.

Part-load package isentropic efficiency is applicable to variable-speed compressors, and calculated as the weighted average of package isentropic efficiency at three reference load points 100-, 70-, and 40-percent of full-load actual volume flow rate). Package isentropic efficiency at each of these load points is calculated in a similar manner to full-load package isentropic efficiency, and the test procedure final rule provides complete instructions on all measurements and calculations needed for determining part-load package isentropic efficiency.

The test procedure final rule also contains specific methods to determine the full-load actual volume flow rate and full-load operating pressure of a compressor, both of which are necessary to test a compressor model and determine the applicable energy conservation standard for certain varieties of compressors in a repeatable way.

D. Impacts of Sampling Plan on Energy Conservation Standards Analysis

DOE defines, as part of the test procedure for compressors, the sampling requirements in part 429 of Chapter II, subchapter D of Title 10, Code of Federal Regulations. In accordance with § 429.63, manufacturers must determine the represented rating for each basic compressor model either by testing in conjunction with the applicable sampling provisions or by applying an AEDM. If the represented value is determined through testing, manufacturers must use a sample of not less than two units and any represented value of the full- or part-load package isentropic efficiency of a basic model must be calculated as the lower of (1) the mean of the test sample, and (2) the lower 95 percent confidence limit (''LCL'') divided by 0.95. DOE also establishes that package specific power, full-load actual volume flow rate, full-load operating pressure, and pressure ratio at full-load operating pressure must be represented as the mean of the test sample.

In the energy conservation standards NOPR, DOE directly calculated the full- or part-load isentropic efficiency of each compressor using values reported in the CAGI Performance Verification Program data sheets.[34] Ultimately, DOE used this performance data to establish efficiency levels for each equipment class. DOE assumed that the compressor performance data published as part of the CAGI Performance Verification Program represented the population mean for each compressor model.

DOE received many comments from interested parties that were concerned that the data used to develop efficiency levels and ultimately propose energy conservation standards was not reflective of the sampling plan adopted in the test procedure final rule. Specifically, CAGI, Ingersoll Rand, and Sullivan-Palatek commented that the efficiency levels proposed by DOE do not consider the certification sampling plan proposed in the test procedure, stating that the use of the 95-percent lower confidence limit would result in a more conservative rating than what is currently represented on CAGI Performance Verification Program Data sheets. Commenters argued that DOE must adjust standard level, because the proposed standard level did not consider the impact of the sampling plan. (EERE–2014–BT–TP–0054, CAGI, No. 0010 at pp. 14, 15; Ingersoll Rand, No. 0055 at p. 2; EERE–2014–BT–TP–0054, Ingersoll Rand, No. 0011 at p. 2; Ingersoll Rand, Public Meeting Transcript, No. 0044 at p. 57; EERE–2014–BT–TP–0054, Ingersoll Rand, Public Meeting Transcript, No. 0016 at pp. 121–2; Sullivan-Palatek, No. 0051 at p. 4; EERE–2014–BT–TP–0054, Sullivan-Palatek, No. 0007 at pp. 2, 4) Sullair supported CAGI's comments regarding sampling. (EERE–2014–BT–TP–0054, Sullair, No. 0006 at p. 1) Sullivan-Palatek further commented that the proposed standards, if left without adjustment, place an extra level of performance above and beyond that required by the proposed standard. (EERE–2014–BT–TP–0054, Sullivan-Palatek, No. 0007 at p. 4)

DOE agrees with comments made by CAGI, Ingersoll Rand, Sullair, and Sullivan-Palatek that the industry's approach to testing in accordance with ISO 1217:2009 does not have the sampling and certification requirements that DOE adopts in the test procedure final rule. Further, DOE acknowledges that the data used to develop the efficiency levels presented in the energy conservation standards NOPR, predominantly collected from publicly available data published in accordance with the CAGI Performance Verification Program, was not assessed for, or adjusted to account for, potential impacts of the test procedure sampling plan.

At the June 20, 2016 test procedure public meeting, DOE requested information regarding the process that manufacturers currently use to rate compressors. (EERE–2014–BT–TP–0054, DOE, Public Meeting Transcript, No. 0016 at pp. 42–43). DOE received feedback from Ingersoll Rand, Sullair, and Sullivan-Palatek indicating that they use a combination of test data and calculations. (EERE–2014–BT–TP–0054, Ingersoll Rand, Public Meeting Transcript, No. 0016 at pp. 44–45; EERE–2014–BT–TP–0054, Sullair, Public Meeting Transcript, No. 0016 at p. 43; EERE–2014–BT–TP–0054, Sullivan-Palatek, Public Meeting Transcript, No. 0016 at p. 44) However, DOE did not receive any specific performance test data or specific information on unit-to-unit variability, nor did DOE receive specific information on how a manufacturers arrives at a compressor rating (*i.e.,* the sample mean of tested compressor).

In written comments, DOE did receive general information on the topic. Specifically, Ingersoll Rand noted that ISO 1217:2009(E) is designed to provide values closer to the population's ''true mean,'' whereas DOE's proposed sampling plan is designed to give conservative results. (Ingersoll Rand, No. 0055 at p. 2) Similarly, CAGI stated that for any given basic compressor package model, one can expect there will be a distribution of efficiency around the ''true mean'' of the population. (EERE–2014–BT–TP–0054, CAGI, No. 0010 at pp. 12–13) Further, CAGI stated that they believe that current manufacturer rating programs are designed to provide values that are closer to the population's ''true mean''

[33] ISO 1217:2009(E)/Amd.1:2016 is titled ''Calculation of isentropic efficiency and relationship with specific energy.''

[34] CAGI Performance Verification Program data sheets are discussed in section IV.C.1.a.

than does DOE's proposal. (EERE–2014–BT–TP–0054, CAGI, No. 0010 at p. 14)

Regarding the distribution of the test results, Ingersoll Rand and Sullivan-Palatek commented that the data used to form the efficiency levels proposed by DOE is reflective of a 5-percent enforcement tolerance under the CAGI Performance Verification Program. (Ingersoll Rand, No. 0055 at p. 2; Sullivan-Palatek, No. 0051 at p. 4; Sullivan-Palatek, Public Meeting Transcript, No. 0044 at p. 106) DOE interprets the 5-percent enforcement tolerance referred to by Ingersoll Rand and Sullivan-Palatek to reflect the 5-percent allowable variation in specific power allowed per Table C.2 of Annex C of ISO 1217:2009(E) for actual volume flow rates exceeding 0.250 cubic meters per second. DOE further assumes that this tolerance represents the bounds of the distribution of specific power for ISO 1217:2009(E).

To evaluate the effect of DOE's sampling plan in the test procedure final rule, DOE would prefer to have used the source data recorded in accordance with ISO 1217:2009(E) and directly calculate the certified value of full- or part-load isentropic efficiency for each compressor to develop the efficiency levels for each compressors as specified in the DOE test procedure. In the absence of source data, DOE would prefer to capture the variability of the CAGI Performance Verification Program data with detailed information of representative unit-to-unit variability. Unfortunately, DOE did not receive compressor test data with which DOE could directly calculate the certified full- or part-load isentropic efficiency (*i.e.,* DOE does not have multiple tested values for each compressor basic model).

In the absence of receiving full test data or a detailed description of testing variability, DOE uses the feedback from manufacturers regarding the CAGI Performance Verification Program data to conduct a statistical analysis to assess the impact of the sampling plan in the test procedure final rule on package isentropic efficiency ratings. Specifically, DOE employs a Monte Carlo simulation of compressor ratings using Oracle Crystal Ball. A Monte Carlo simulation is a series of randomized trials that, after many repetitions, converges on a solution with a distribution of results. The resulting solution of a Monte Carlo analysis reflects the interactions between known ''input'' distributions; for the purposes of this analysis, the Monte Carlo analysis reflects the interaction between the distribution of specific power for each compressor, the known sampling plan in the compressors test procedure, and the resulting compressor package isentropic efficiency rating. The simulation calculates the full- or part-load package isentropic efficiency of each compressor by using the value of actual volume flow rate and compressor discharge pressure from the updated CAGI database along with the value of specific power (according to the assumed distribution of specific power) for each compressor in the test sample. From there, the simulation selects the lower of the (1) sample mean or (2) 95 percent LCL of the sample divided by 0.95 for each compressor basic model and stores the value as the ''simulated'' value of compressor full- or part-load isentropic efficiency for each trial. In addition, the Monte Carlo analysis stores the difference between the ''simulated'' and calculated mean-value[35] of full- or part-load isentropic efficiency for each compressor in the DOE database, for each trial. DOE calculates statistics on the simulation data to understand the likelihood and magnitude of a change in compressor rating under the DOE sampling and certification plan. Additional details of the calculations in the Monte Carlo simulation and a more comprehensive results section is in Chapter 5 of the TSD.

To construct a Monte Carlo simulation with the goal of understanding the impacts of the sampling plan on full- and part-load isentropic efficiency, DOE makes assumptions regarding the mean and statistical variation of specific power. As noted previously, DOE received information that the specific power data represented as a part of CAGI Performance Verification Program is representative of the ''true mean'' of a compressor model's performance. As such, in the Monte Carlo model, DOE assumes that the specific power values represented on CAGI performance verification data sheets represent the population mean.

DOE also recognizes that the CAGI Performance Verification Program guarantees that the tested specific power performance of any participating compressor will be within the bounds of Table III.1.[36] Therefore, DOE assumes that the range of compressor specific power variation mirror the bounds of variation defined in Table III.1.

TABLE III.1—PERMISSIBLE DEVIATION OF SPECIFIC POWER AND ISENTROPIC EFFICIENCY DURING CUSTOMER ACCEPTANCE TEST FOR ELECTRICALLY DRIVEN PACKAGED DISPLACEMENT COMPRESSORS *

Volume flow rate at specified conditions * (m^3/s) * 10^{-3}	Specific power tolerances (%)	
	Upper limit	Lower limit
$0 < v \leq 8.3$	+8	−8
$8.3 < v \leq 25$	+7	−7
$25 < v \leq 250$	+6	−6
$v > 250$	+5	−5

* The column titles were edited from the source document for clarity.

With the mean and range of the test sample established, DOE needed to assume a statistical distribution centered about the mean and bounded by the allowable tolerance in Table III.1. DOE considered multiple distributions which could characterize tested compressor specific power. Specifically, DOE considered two general distributions: (1) A uniform distribution which assumed equal probability of values between the lower and upper limit of specific power variation as defined in Table III.1, and (2) a normal distribution.

Per Table C.2 of Annex C of ISO 1217:2009(E), the rationale for establishing a tolerance for specific power is to account for variation due to manufacturing and measurement tolerances. DOE interprets the statement to mean that the specific power tolerance accounts for unit-to-unit performance differences due to manufacturing tolerances as well as the inherent repeatability of the ISO 1217:2009(E) test procedure. A literature review conducted by DOE found that a uniform probability distribution, which has an equal probability of values between the lower and upper tolerance, does not commonly represent distributions that have continuous outcomes (such as specific power). Alternatively, literature states that of the commonly occurring probability distributions, a normal distribution is the most appropriate choice to represent the probability of a continuous outcome that is a function of the interaction between random and independent

[35] The calculated mean value of full- or part-load isentropic efficiency is derived by direct calculations from reported values on the CAGI Performance Verification Program data sheets. As noted by manufacturer comments, the specific power of a compressor is assumed to represent the ''true mean'' or ''population mean'' of the represented compressor model.

[36] International Organization for Standardization (ISO), ISO 1217 (E), Displacement compressors—Acceptance tests, International Organization for Standardization (ISO), 2009, Annex H, Table H.3.

variables.[37] Because the CAGI Performance Verification Program guarantees that performance and specific power is a function of random and independent variables, including manufacturing tolerances and test to test variation, it is much more likely that a normal probability distribution is the most representative of compressor specific power. For these reasons, a normal distribution is most appropriate to represent the unit-to-unit variability of compressor specific power. However, DOE explores the impact of this assumption as part of the sensitivity analysis and concludes that the assumption of a normal or uniform distribution, by itself, did not have an impact on the conclusion drawn from the analysis. A complete discussion of the sensitivity analysis can be found at the conclusion of this section.

With the distribution type selected, DOE then considered the standard deviation of the distribution. As previously stated, Table III.1 represents the allowable ''enforcement tolerance'' that CAGI uses as part of the Performance Verification Program. Because the CAGI Performance Verification Program guarantees performance within these tolerances, DOE concludes that, for all compressors that participate in this program, each unit distributed in commerce should achieve performance within these tolerances. Consequently, DOE assumes that the tolerance range specified in Table III.1 represents a range of plus or minus three standard deviations from the mean; *i.e.,* 99.7-percent of test units will fall within that range specified in Table III.1. Functionally, this translates to a standard deviation of compressor specific power that represented one-third of the tolerance listed in Table III.1. As an example, if the tolerance for a compressor's represented specific power is ±6-percent, the standard deviation for the distribution of specific power for that compressor would be 2-percent of the compressor's specific power.

With DOE's establishing assumptions for the distribution of compressor specific power in the Monte Carlo simulation, the last remaining assumption is the number of units in the test sample to certify the full- and part-load isentropic efficiency for a compressor basic model. The test procedure final rule specifies a minimum sample size of two compressors is necessary to certify the full- or part-load isentropic efficiency of a basic model; there is no upper limit to the number of units that can be tested. DOE assumes that a manufacturer would test more than two units if the calculated full- or part-load isentropic efficiency (according to the sample plan) does not meet the expectations of the manufacturer. DOE recognizes that there is a practical limit to the number of units that can be tested and assumes that four units of each basic model are tested in the simulation, to calculate the full- and part-load package isentropic efficiency of the compressor. DOE explores the impact of this assumption as part of the sensitivity analysis and concludes that the assumption of testing three or four units, by itself, does not have an impact on the results of the analysis. A complete discussion of the sensitivity analysis is in the conclusion of this section.[38]

Based on the results of the Monte Carlo, DOE does not expect that, on average, the sampling plan will result in a lower certified full- or part-load package isentropic efficiency values, in comparison to the value calculated from the CAGI Performance Verification Program data sheets. Put differently, for each iteration of the Monte Carlo simulation, given a random sample of four units, the mean of the sample is nearly always lower than the 95th lower confidence interval divided by 0.95.

DOE also conducted a sensitivity analysis to understand the impact of two key assumptions: the number of units tested to certify the full- and part-load isentropic efficiency and the assumed shape of the specific power distribution. Specifically, DOE adjusted the number of units in the Monte Carlo analysis to reflect a sample size of three units and adjusted the distribution of compressor specific power to represent a uniform distribution. A uniform distribution is the most conservative assumption for the distribution of specific power; it provides an equal probability of a specific power value between the tolerance range permitted in Table III.1. The results of the sensitivity analysis for fixed-speed compressors and variable-speed compressors, expressed as the average change in certified rating (difference between the calculated and simulated mean-value), in points of efficiency, are in Table III.2 and Table III.3, respectively.

TABLE III.2—SENSITIVITY ANALYSIS RESULTS FOR FIXED-SPEED COMPRESSORS: AVERAGE CHANGE IN COMPRESSOR FULL- OR PART-LOAD PACKAGE ISENTROPIC EFFICIENCY RATING

Number of units in sample	Uniform distribution of specific power (points)	Normal distribution of specific power (points)
3	−0.7	0.0
4	0.0	0.0

TABLE III.3—SENSITIVITY ANALYSIS RESULTS FOR VARIABLE-SPEED COMPRESSORS: AVERAGE CHANGE IN COMPRESSOR FULL- OR PART-LOAD PACKAGE ISENTROPIC EFFICIENCY RATING

Number of units in sample	Uniform distribution of specific power (points)	Normal distribution of specific power (points)
3	−0.7	0.0
4	0.0	0.0

Based on the results of the analysis, DOE expects that, for compressors participating in the CAGI Performance Verification Program and abiding by the tolerance in Table III.1, the sampling plan established in the test procedure will result in certified package isentropic efficiency values that represents the sample mean. Further, DOE reiterates that in the absence of test data or detailed information from manufacturers, a normal distribution best represents the unit-to-unit variability among compressors; however, the analysis shows that this assumption had little influence on the results of the sampling plan analysis. Additionally, DOE found that the results of the analysis are not sensitive to the assumption of testing four units, as the same conclusion is reached with a sample size of three units. Therefore, DOE concludes that while the assumptions that DOE made are grounded in reasoned logic and research, the results would be the same with a more conservative set of assumptions. For all of the reasons discussed in this section, DOE concludes that no adjustments are necessary to the efficiency levels presented in the energy conservation standards NOPR.

E. Compliance Date

DOE has determined that any standards established by this rule will

[37] Tennett, Geoff. *Six Sigma: SPC and TQM in Manufacturing and Services.* 2001. Gower Publishing Company: Burlington, VT.

[38] The cost of testing four units to certify the full- or part-load package isentropic efficiency is accounted for in the Manufacturer Impact Analysis, section IV.J.2.c.

apply to compressors manufactured 5 years after the date on which any standard is published.[39] Therefore, the compliance date of this rule is January 10, 2025.

F. Technological Feasibility

1. General

In each energy conservation standards rulemaking, DOE conducts a screening analysis based on information gathered on all current technology options and prototype designs that could improve the efficiency of the products or equipment that are the subject of the rulemaking. As the first step in such an analysis, DOE develops a list of technology options for consideration in consultation with manufacturers, design engineers, and other interested parties. DOE then determines which of those means for improving efficiency are technologically feasible. DOE considers technologies incorporated in commercially available products or in working prototypes to be technologically feasible. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(i)

After DOE has determined that particular technology options are technologically feasible, it further evaluates each technology option in light of the following additional screening criteria: (1) Practicability to manufacture, install, and service; (2) adverse impacts on product utility or availability; and (3) adverse impacts on health or safety. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(ii)–(iv) Additionally, it is DOE policy not to include in its analysis any proprietary technology that is a unique pathway to achieving a certain efficiency level. Section IV.B of this document discusses the results of the screening analysis for compressors, particularly the designs DOE considered, those it screened out, and those that are the basis for the standards considered in this rulemaking. For further details on the screening analysis for this rulemaking, see chapter 4 of the final rule TSD.

2. Maximum Technologically Feasible Levels

When DOE adopts a new or amended standard for a type or class of covered equipment, it must determine the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible for such product. (42 U.S.C. 6295(p)(1) and 42 U.S.C. 6316(a)) Accordingly, in the engineering analysis, DOE determined the maximum technologically feasible (''max-tech'') improvements in energy efficiency for compressors, using the design parameters for the most efficient products available on the market or in working prototypes. The max-tech levels that DOE determined for this rulemaking are described in section IV.C.5.b of this final rule and in chapter 5 of the final rule TSD.

G. Energy Savings

1. Determination of Savings

For each trial standard level (''TSL''), DOE projected energy savings from application of the TSL to compressors purchased in the 30-year period that begins in the first full year of compliance with the standards (2022–2051).[40] The savings are measured over the entire lifetime of products purchased in the 30-year analysis period. DOE quantified the energy savings attributable to each TSL as the difference in energy consumption between each standards case and the no-new-standards case. The no-new-standards case represents a projection of energy consumption that reflects how the market for a product would likely evolve in the absence of energy conservation standards.

DOE used its national impact analysis spreadsheet models to estimate national energy savings (''NES'') from potential standards for compressors. The NIA spreadsheet model (described in section IV.H of this rule) calculates energy savings in terms of site energy, which is the energy directly consumed by products at the locations where they are used. For electricity, DOE reports national energy savings in terms of primary energy savings, which is the savings in the energy that is used to generate and transmit the site electricity. For natural gas, the primary energy savings are considered to be equal to the site energy savings. DOE also calculates NES in terms of full-fuel-cycle (''FFC'') energy savings. The FFC metric includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and thus presents a more complete picture of the impacts of energy conservation standards.[41] DOE's approach is based on the calculation of an FFC multiplier for each of the energy types used by covered products or equipment. For more information on FFC energy savings, see section IV.H.2 of this final rule.

2. Significance of Savings

To adopt any new or amended standards for a covered product, DOE must determine that such action would result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B) and 42 U.S.C. 6316(a)) Although the term ''significant'' is not defined in the Act, the U.S. Court of Appeals, for the District of Columbia Circuit in *Natural Resources Defense Council* v. *Herrington,* 768 F.2d 1355, 1373 (D.C. Cir. 1985), indicated that Congress intended ''significant'' energy savings in the context of EPCA to be savings that are not ''genuinely trivial.'' The energy savings for all the TSLs considered in this rulemaking, including the adopted standards, resulting in positive net benefits to the Nation, and are nontrivial, and, therefore, DOE considers them ''significant'' within the meaning of 42 U.S.C. 6295(o)(3)(B).

H. Economic Justification

1. Specific Criteria

As noted above, EPCA provides seven factors to evaluate in determining whether a potential energy conservation standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII) and 42 U.S.C. 6316(a)) The following sections discuss how DOE has addressed each of those seven factors in this rulemaking.

a. Economic Impact on Manufacturers and Consumers

In determining the impacts of potential standards on manufacturers, DOE conducts a manufacturer impact analysis (''MIA''), as discussed in section IV.J of this document. DOE first uses an annual cash-flow approach to determine the quantitative impacts. This step includes both a short-term assessment—based on the cost and capital requirements during the period between when a regulation is issued and when entities must comply with the regulation—and a long-term assessment over a 30-year period. The industrywide impacts analyzed include (1) industry

[39] EPCA specifies that the provisions of subsections (l) through (s) of 42 U.S.C. 6295 shall apply to any other type of industrial equipment which the Secretary classifies as covered equipment, which includes compressors. (42 U.S.C. 6316(a)) 42 U.S.C. 6295(l)(2) states that any new or amended standard for any other type of consumer product which the Secretary classifies as a covered product shall not apply to products manufactured within five years after the publication of a final rule establishing such standard. This 5-year lead time also applies to other types of industrial equipment, such as compressors.

[40] DOE also presents a sensitivity analysis that considers impacts for products shipped in a 9-year period.

[41] The FFC metric is discussed in DOE's statement of policy and notice of policy amendment. 76 FR 51282 (August 18, 2011), as amended at 77 FR 49701 (Aug. 17, 2012).

net present value (INPV), which values the industry based on expected future cash flows; (2) cash flows by year; (3) changes in revenue and income; and (4) other measures of impact, as appropriate. Second, DOE analyzes and reports the impacts on different types of manufacturers, including impacts on small manufacturers. Third, DOE considers the impact of standards on domestic manufacturer employment and manufacturing capacity, as well as the potential for standards to result in plant closures and loss of capital investment. Finally, DOE takes into account cumulative impacts of various DOE regulations and other regulatory requirements on manufacturers.

For individual consumers, measures of economic impact include the changes in LCC and PBP associated with new or amended standards. These measures are discussed further in the following section. For consumers in the aggregate, DOE also calculates the national net present value of the economic impacts applicable to a particular rulemaking. DOE also evaluates the LCC impacts of potential standards on identifiable subgroups of consumers that may be affected disproportionately by a national standard.

b. Savings in Operating Costs Compared to Increase in Price (LCC and PBP)

EPCA requires DOE to consider the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered product that are likely to result from a standard. (42 U.S.C. 6295(o)(2)(B)(i)(II) and 42 U.S.C. 6316(a)) DOE conducts this comparison in its LCC and PBP analyses.

The LCC is the sum of the purchase price of a product (including its installation) and the operating cost (including energy, maintenance, and repair expenditures) discounted over the lifetime of the product. The LCC analysis requires a variety of inputs, such as product prices, product energy consumption, energy prices, maintenance and repair costs, product lifetime, and discount rates appropriate for consumers. To account for uncertainty and variability in specific inputs, such as product lifetime and discount rate, DOE uses a distribution of values, with probabilities attached to each value.

The PBP is the estimated amount of time (in years) it takes consumers to recover the increased purchase cost (including installation) of a more efficient product through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost due to a more stringent standard by the change in annual operating cost for the year that standards are assumed to take effect.

For its LCC and PBP analyses, DOE assumes that consumers will purchase the covered products in the first full year of compliance with new standards. The LCC savings for the considered efficiency levels are calculated relative to the case that reflects projected market trends in the absence of new standards. DOE's LCC and PBP analyses are discussed in further detail in section IV.F of this document.

c. Energy Savings

Although significant conservation of energy is a separate statutory requirement for adopting an energy conservation standard, EPCA requires DOE, in determining the economic justification of a standard, to consider the total projected energy savings that are expected to result directly from the standard. (42 U.S.C. 6295(o)(2)(B)(i)(III) and 42 U.S.C. 6316(a)) As discussed in section IV.H, DOE uses the NIA spreadsheet models to project national energy savings.

d. Lessening of Utility or Performance of Products

In establishing product classes, and in evaluating design options and the impact of potential standard levels, DOE evaluates potential standards that would not lessen the utility or performance of the considered products. (42 U.S.C. 6295(o)(2)(B)(i)(IV) and 42 U.S.C. 6316) Based on data available to DOE, the standards adopted in this final rule would not reduce the utility or performance of the products subject to this rulemaking.

e. Impact of Any Lessening of Competition

EPCA directs DOE to consider the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from a standard. (42 U.S.C. 6295(o)(2)(B)(i)(V) and 42 U.S.C. 6316(a)) It also directs the Attorney General to determine the impact, if any, of any lessening of competition likely to result from a standard and to transmit such determination to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. (42 U.S.C. 6295(o)(2)(B)(ii) and 42 U.S.C. 6316(a)) To assist the Department of Justice (''DOJ'') in making such a determination, DOE transmitted copies of its proposed rule and the NOPR TSD to the Attorney General for review, with a request that the DOJ provide its determination on this issue. In its assessment letter responding to DOE, DOJ concluded that the proposed energy conservation standards for compressors are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

f. Need for National Energy Conservation

DOE also considers the need for national energy conservation in determining whether a new or amended standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(VI) and 42 U.S.C. 6316(a)) The energy savings from the adopted standards are likely to provide improvements to the security and reliability of the Nation's energy system. Reductions in the demand for electricity also may result in reduced costs for maintaining the reliability of the Nation's electricity system. DOE conducts a utility impact analysis to estimate how standards may affect the Nation's needed power generation capacity, as discussed in section IV.M of this document.

The adopted standards also are likely to result in environmental benefits in the form of reduced emissions of air pollutants and greenhouse gases (''GHGs'') associated with energy production and use. DOE conducts an emissions analysis to estimate how potential standards may affect these emissions, as discussed in section IV.K; the emissions impacts are reported in section V.B.8 of this document. DOE also estimates the economic value of emissions reductions resulting from the considered TSLs, as discussed in section IV.L of this document.

g. Other Factors

In determining whether an energy conservation standard is economically justified, DOE may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII) and 42 U.S.C. 6316(a)) To the extent interested parties submit any relevant information regarding economic justification that does not fit into the other categories described above, DOE could consider such information under ''other factors.''

2. Rebuttable Presumption

As set forth in 42 U.S.C. 6295(o)(2)(B)(iii) and 42 U.S.C. 6316(a), EPCA creates a rebuttable presumption that an energy conservation standard is economically justified if the additional cost to the consumer of a product that meets the standard is less than three times the value of the first year's energy

savings resulting from the standard, as calculated under the applicable DOE test procedure. DOE's LCC and PBP analyses generate values used to calculate the effect potential new or amended energy conservation standards would have on the payback period for consumers. These analyses include, but are not limited to, the 3-year payback period contemplated under the rebuttable-presumption test. In addition, DOE routinely conducts an economic analysis that considers the full range of impacts to consumers, manufacturers, the Nation, and the environment, as required under 42 U.S.C. 6295(o)(2)(B)(i) and 42 U.S.C. 6316(a). The results of this analysis serve as the basis for DOE's evaluation of the economic justification for a potential standard level (thereby supporting or rebutting the results of any preliminary determination of economic justification). The rebuttable presumption payback calculation is discussed in section IV.F of this final rule.

I. Other Issues

1. Comments on the Proposed Standards

In the energy conservation standards NOPR, DOE proposed to establish energy conservation standards at TSL 2. However, DOE also noted that it was strongly considering TSL 3 due to its greater net benefits. 81 FR 31680, 31683 (May 19, 2016). DOE received numerous, generalized comments related to its proposal; these comments are summarized in this section. All comments related to DOE's analyses and specific technical proposal are located in the appropriate subsections of sections III and IV of this final rule.

a. Recommended Energy Conservation Standard Level

Ingersoll Rand supported TSL 2 and noted that the proposed standard level struck an appropriate balance between a more energy efficient marketplace and the increase in associated costs, leading to an economically justified rulemaking that maximizes consumer benefits. (Ingersoll Rand, No. 0055 at pp. 2–3) Similarly, CAGI and Sullair commented that they support TSL 2, provided that DOE make adjustments to the standard that reflect CAGI's and Sullair's comments. (Sullair, No. 0056 at pp. 5–6; CAGI, No. 0052 at p. 3)

CAGI also stipulated that it would support TSL 2, provided that the trial standard level is technically feasible and economically justified after accounting for CAGI's other suggestions as well as the impact of the test procedure on assumed product compliance. (CAGI, No. 0052 at p. 3) Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

The CA IOUs commented that they support TSL 2, but suggest that DOE adopt TSL 3 due to the higher benefits associated with TSL 3, such as increased energy savings, a simple payback period of 4.1 years or less for each equipment class, and reduced CO_2 emissions that assist California with meeting state greenhouse gas emissions goals. (CA IOUs, No. 0059 at pp. 1–2)

ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE commented that they support TSL 3, noting that TSL 3 offered increased energy savings, increased NPV for consumers, and reduced CO_2 emissions when compared to TSL 2. (ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at pp. 1–2)

The CA IOUs, ASAP, ACEEE, NEEA, NRDC, NEEP, NWPCC, and ASE all commented that TSL 3 aligned closely with EU regulation, which consequently reduces the burden on manufacturers to comply with two standards when selling their products globally. (CA IOUs, No. 0059 at pp. 1–2; ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at pp. 1–2; NEEA and NWPCC, No. 0057 at p. 3)

Sullivan-Palatek commented that TSL 3 is an aggressive approach to setting initial conservation standards and suggested that DOE collect test data and observe the program prior to adopting a higher standard than TSL 2. (Sullivan-Palatek, No. 0051 at p. 5) Similarly, Ingersoll Rand did not support standards at TSL 3 and stated that standards at TSL 3 are not economically justified. (Ingersoll Rand, No. 0055 at pp. 2–3)

DOE discusses respective benefits and burdens of each TSL and, ultimately, presents reasoning for the TSL adopted as a standard in section V.C. DOE takes into consideration all of the factors mentioned by commenters, including consumer benefits, impacts to manufacturers, emissions reductions, and the benefits of harmonizing with the European Union.

Castair opposed standards at TSL 2. First Castair argued that electric motors are already subject to energy conservations standards and thus compressors do not need to be further regulated. Second, Castair commented that the compressor industry competes on the basis of efficiency, and therefore efficiency standards are not necessary. (Castair, No. 0062 at p. 2) Similarly, Jenny Products commented that more efficient compressors are commercially available for all proposed equipment classes, which negates the need for an energy conservation standard for compressors. (Jenny Products, No. 0058 at p. 5)

In response to Castair and Jenny's comments, DOE notes that although some consumers may choose efficient compressors in the current market, they do not need to purchase efficient compressors. An energy conservation standard removes the lowest performing compressors from the market, and ensures that consumers receive, on average, economically justified energy savings. Consumers purchasing above that level voluntarily are unaffected. However, consumers who previously purchased below the standard level would be unable to do so, thus ensuring that consumers purchase more efficient equipment, which provides a corresponding improvement in life-cycle cost. While it is true that some compressor designs use motors that are currently subject to energy conservations standards, compressor manufacturers do not need to construct packages using motors within scope of standards. Moreover, a motor being subject to energy conservation standards does not preclude the possibility of finding economically justified savings at the compressor package level. There are many other opportunities to improve the efficiency of a compressor package beyond the driver.

Compressed Air Systems commented that DOE did not provide proof that (1) the proposed standards would improve efficiency over current designs, (2) the proposed standards were technically feasible, and (3) the proposed standards provide an economic benefit for consumers. Finally, Compressed Air Systems alleged that DOE did not collect sufficient data to support DOE's conclusions for the standards proposed in the NOPR. (Compressed Air Systems, No. 0061 at p. 1)

As discussed in section III.B.6, DOE acknowledges that it lacks sufficient data for certain varieties of compressors and is reducing the scope of this final rule appropriately. For the compressors that remain in scope, DOE maintains that sufficient data exists to support adoption of a standard under the provisions of EPCA, as amended. Specifically, DOE discusses efficiency improvement in section IV.C.4, technological feasibility in section III.F, and the economic benefits to consumers in section V.B.1.

b. Reciprocating Compressors

The CA IOUs suggested that DOE should consider EL 2 for reciprocating compressors in the standard adopted in the final rule. (CA IOUs, No. 0059 at pp. 1–2; CA IOUs, Public Meeting Transcript, No. 0044 at p. 152–153) As discussed in section III.B.2, DOE is excluding reciprocating compressors from the scope of this final rule. Therefore, no EL is selected.

2. Other Comments

The P. R. of China commented that DOE is obliged to share the data used to determine that energy conservation standards were justified in accordance with Article 2.5 of World Trade Organization Agreement on Technical Barriers to Trade.[42] (P. R. China, No. 0049 at p. 32)

DOE discussed and documented its data, assessments, analysis, and rationale as part of the May 2016 energy conservation standards NOPR 81 FR 31680, this final rule, and the associated TSDs. All relevant data and analysis has been publicly shared through the aforementioned documents.

CAGI also provided a general comment related to DOE's energy conservation standards NOPR proposal. CAGI commented that the most effective way to encourage efficiency is through improving the education and training of individuals who design compressed air demand and supply systems. CAGI argued that the proposed energy conservation standard for compressors diverts limited personnel and financial resources from education and training. (CAGI, No. 0052 at p. 3) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1) Ingersoll Rand suggested that compressor package efficiency policy should include a regularly scheduled equipment maintenance program, and that efforts in compressed air system efficiency could lead to significant energy savings. (Docket No. EERE–2012–BT–DET–0033, Ingersoll Rand, No. 0004 at p. 3)

DOE notes that it addresses all individual suggestions provided by CAGI in this final rule, incorporating such suggestions where appropriate. DOE evaluates the benefits and burdens associated with all potential energy conservation standard levels in section V.C. In response to Ingersoll Rand's and CAGI's comments regarding training, maintenance, and education, DOE recognizes that although such efforts may save energy, they are beyond the extent of DOE's EPCA authority to require in an energy conservation standards rulemaking.

Sullivan-Palatek commented that DOE did not have access to performance data for models with variations; rather DOE used CAGI data sheets for basic model package compressors to develop efficiency levels. Sullivan-Palatek believes that developing a standard from basic model data and applying it to models with variations would be erroneous, as it is like comparing apples to oranges. (EERE–2014–BT–TP–0054, Sullivan-Palatek, No. 0007 at p. 2).

In response, DOE notes that, in the test procedure final rule, DOE incorporated CAGI's recommended list of equipment (which was supported by Sullivan-Palatek), with certain modifications, to define the minimum testing configuration for a compressor basic model. Consequently, basic model variants which add additional equipment to an existing basic model will be tested without the additional equipment, and achieve the same rating as the basic package compressor it was derived from. Furthermore, as discussed in section III.B.8, for equipment varieties currently distributed in commerce, DOE was unable to find evidence that variants created by substituting components from basic models would have a material disadvantage, with respect to energy efficiency. For these reasons, DOE believes that the efficiency levels established in this final rule are applicable to all compressors within the scope of this final rule.

IV. Methodology and Discussion of Related Comments

This section addresses the analyses DOE has performed for this rulemaking. Separate subsections address each component of DOE's analyses.

DOE used several analytical tools to estimate the impact of the standards considered in this document. The first tool is a spreadsheet that calculates the LCC savings and PBP of potential amended or new energy conservation standards. The national impacts analysis uses a second spreadsheet set that provides shipments projections and calculates national energy savings and net present value of total consumer costs and savings expected to result from potential energy conservation standards. DOE uses the third spreadsheet tool, the Government Regulatory Impact Model (''GRIM''), to assess manufacturer impacts of potential standards. These three spreadsheet tools are available on the DOE website for this rulemaking: *https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=63.* Additionally, DOE used output from the latest version of the Energy Information Administration's (''EIA'') *Annual Energy Outlook* (''*AEO*'') for the emissions and utility impact analyses.

A. Market and Technology Assessment

DOE develops information in the market and technology assessment that provides an overall picture of the market for the equipment concerned, including the purpose of the equipment, the industry structure, manufacturers, market characteristics, and technologies used in the equipment. This activity includes both quantitative and qualitative assessments based primarily on publicly available information. The subjects addressed in the market and technology assessment for this rulemaking include a determination of equipment classes and an assessment of technologies and design options that could improve the energy efficiency of compressors. Chapter 3 of the final rule TSD provides further discussion of these topics as well as discussions on definitions, scope of coverage, test procedures, trade associations, manufacturers, shipments, regulatory and non-regulatory programs.

1. Equipment Classes

When evaluating and establishing energy conservation standards, DOE divides covered equipment into equipment classes by the type of energy used, by capacity, or other performance-related features that justify differing standards. In making a determination of whether a performance-related feature justifies a different standard, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE determines are appropriate. (42 U.S.C. 6295(q) and 42 U.S.C. 6316(a)). In the energy conservation standards NOPR for compressors, DOE proposed creating equipment classes based on the following factors:

- Compression principle,
- lubricant presence,
- cooling method,
- motor speed type, and
- motor phase count. 81 FR 31680, 31697–31700 (May 19, 2016).

After taking into consideration the changes to scope presented in section III.B, DOE is establishing fewer equipment classes than it proposed to establish in the energy conservation standards NOPR. In this final rule, the

[42] Agreement on Technical Barriers to Trade, 1868 U.N.T.S. 120.

remaining equipment classes are differentiated only by motor speed range and cooling method. The following sections, IV.A.1.a through IV.A.1.f, discuss these equipment class-setting factors, as well as those considered in the NOPR, in detail.

a. Compression Principle

In the energy conservation standards NOPR, DOE proposed to create equipment classes based on compression principle. Specifically, DOE proposed to create separate equipment classes for rotary compressors and reciprocating compressors on the basis that they have different achievable efficiencies and distinct utility to end users with different duty cycles. 81 FR 31680, 31697–31698 (May 19, 2016).

As discussed in section III.B.2, DOE is including only rotary compressors within the scope of this rulemaking. Therefore, in this final rule DOE is not establishing separate equipment classes for reciprocating compressors.

b. Lubricant Presence

In the energy conservation standards NOPR, DOE proposed to create separate equipment classes for lubricated and lubricant-free compressors on the basis that lubricant-free compressors are less able to achieve higher efficiencies but offer utility to end users with applications requiring especially clean air. 81 FR 31680, 31698 (May 19, 2016).

As discussed in section III.B.4, DOE is not including lubricant-free compressors within the scope of this rulemaking. Therefore, in this final rule, DOE is not establishing separate equipment classes for lubricant-free compressors.

c. Motor Speed Range

In the energy conservation standards NOPR, DOE proposed to establish separate equipment classes for fixed-speed compressors and for variable-speed compressors on the basis that variable-speed compressors are generally less efficient at full-load than fixed-speed compressors, but variable-speed compressors offer additional utility in applications in which demand varies. Conversely, fixed-speed compressors are generally more efficient at full load, but do not offer the utility of reduced-speed operation to match variable demand. 81 FR 31680, 31699 (May 19, 2016).

In response to DOE's proposal, Atlas Copco supported separate equipment classes for fixed-speed and variable-speed compressors.[43] (Atlas Copco, No. 0054 at pp. 15–16)

DOE received no other comments regarding the creation of separate equipment classes for fixed-speed and variable-speed compressors. Therefore, in this final rule, DOE establishes separate equipment classes for fixed-speed and variable-speed compressors.

d. Number of Motor Phases

In the energy conservation standards NOPR, DOE proposed to divide single-phase and three-phase reciprocating compressors into separate equipment classes. DOE reasoned that compressors with a compressor motor nominal horsepower of less than 10 hp can be packaged with either single-phase or three-phase electric motors. Single-phase motors, while typically less efficient than three-phase motors, offer utility in applications with no access to three-phase power. 81 FR 31680, 31699–31700 (May 19, 2016).

In the energy conservation standards NOPR, DOE made no equipment class distinction between single- and three-phase rotary compressors because it was unable to obtain data on the performance of single-phase rotary equipment. As a result, DOE was unable to make a determination regarding whether single-phase equipment could reach the same performance levels as three-phase. DOE noted that single-phase rotary equipment accounted for very few annual shipments, but that if the applicable single-phase motors were less efficient and less expensive than their three-phase counterparts, then to create a separate standard without data would be to risk creating a substitution incentive. 81 FR 31680, 31699–31700 (May 19, 2016).

As discussed in section III.B.3.c, DOE does not believe that an incentive to substitute unregulated single-phase compressors is likely in the absence of standards because single-phase compressors are similar in price to comparable three-phase models, and single-phase compressors have potentially higher installation costs. As a result, DOE is limiting the scope of the energy conservation standards to three-phase compressors. Therefore, in this final rule, DOE is not establishing separate equipment classes based on phase count.

e. Variants of Rotary Compression Technology

In the energy conservation standards NOPR, DOE did not propose to establish equipment classes based on variants of rotary compression technology. 81 FR 31680 (May 19, 2016). For the purpose of this discussion, ''variant'' refers to a style of rotary compressor that is recognized by the industry as a distinct technology. ''Rotary vane'' and ''rotary screw'' are examples of rotary variants.

In response to the energy conservation standards NOPR, Jenny Products stated that vane compressors are inherently different than screw compressors, and that the only similarities between screw and vane compressors is that they are both rotary and positive-displacement. Jenny Products added that vane compressors should not be grouped with screw, piston or centrifugal compressors, and should instead have their own standard. Jenny products further noted that scroll compressors are different from the compressors that are mentioned in the energy conservations standards NOPR proposal and that the standard combines too many compressors into an overly general model. (Jenny Products, No. 0058 at p. 2) Sullivan-Palatek also commented that the NOPR proposal was overly general, with too few equipment classes to reflect the variety and specialization of products on the market. Sullivan-Palatek commented that this overgeneralization could make certain technologies illegal. As examples, Sullivan-Palatek mentioned scroll compressors and vane compressors. (Sullivan-Palatek, No. 0051 at p. 4) DOE clarifies that scroll compressors are not within the scope of this final rule because they are not rotary compressors; scroll compressors orbit[44] without changing angular position. Further, scroll compressors on the market today are generally lubricant-free compressors, which are also not within the scope of this final rule.

In response to Jenny Products' and Sullivan-Palatek's comments on vane compressors, neither commenter provided any performance data or quantitative information to support the claim that vane compressors have significantly different utility and/or performance when compared to screw compressors.

In the absence of quantitative information from commenters, DOE

[43] DOE notes that in this comment Atlas Copco also suggested that fixed-speed and variable-speed compressors should be tested and have results reported both for the full-load package isentropic efficiency as well as the part-load package isentropic efficiency. Atlas Copco argued that this would allow for comparisons across equipment classes and for variable-speed compressors that cannot reach 40-percent flow to calculate the cycle loss and, consequently, calculate the efficiency at 40-percent flow. DOE addressed this aspect of Atlas Copco's concerns in the test procedure final rule.

[44] For example, see: *www.emersonclimate.com/en-us/products/compressors/scroll_compressors/pages/scroll_compressors.aspx.*

reviewed publicly available performance data for rotary vane compressors to determine if differences in performance exist between vane and screw compressors.[45] DOE found that only one vane compressor manufacturer currently participates in the CAGI Performance Verification Program; as a result, all available vane compressor data is associated with this manufacturer. For comparison, eight unique rotary compressor manufacturers currently participate in the CAGI Performance Verification Program.[46]

DOE found that the available fixed-speed vane compressors perform similarly to fixed-speed screw compressors. For example, of 29 in-scope fixed-speed vane compressors for which data was available, 86-percent were able to reach EL 2;[47] in comparison, 84-percent of fixed-speed screw compressors were able to reach EL 2. Further, for this same set of fixed-speed vane compressors, 55-percent were able to reach EL 3;[48] in comparison, 53-percent of fixed-speed screw compressors were able to reach EL 3.[49] Given the comparable performance of rotary screw and rotary vane compressors, DOE finds no justification to establish a separate equipment class for these two variants of rotary compressors. Consequently, in this final rule, DOE makes no change to its NOPR proposal and does not adopt a separate equipment class for vane compressors.

f. Cooling Method

In the energy conservation standards NOPR, DOE proposed creating separate equipment classes for air- and liquid-cooled compressors. DOE discussed the utility of each cooling method, as well as the efficiency differences between the two cooling methods, as reasons to separate compressors based on cooling method. 81 FR 31680, 31699 (May 19, 2016). The following subsections summarize interested party comments related to DOE's proposal.

Utility

NEEA, NWPCC and Sullair stated that the cooling method offers utility wherein air-cooled equipment can be used where water may not be available. (NEEA and NWPCC, No. 0057 at p. 3; Sullair, No. 0056 at pp. 13–14) Compressed Air Systems also supported the creation of equipment classes and stated that the water cooler requires no electrical energy from the package and, as a result, that the same standard would not be applicable to both cooling methods. (Compressed Air Systems, No. 0061 at p. 2) Alternatively, CAGI stated that the decision on cooling method is based on site-specific capabilities and it is not appropriate to separate air- and liquid-cooled compressors into equipment classes. (CAGI, No. 0052 at p. 10; CAGI, Public Meeting Transcript, No. 0044 at p. 22) This position was supported by ASAP based on information provided by industry at the public meeting. (ASAP, Public Meeting Transcript, No. 0044 at p. 24) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair and Sullivan-Palatek supported CAGI's comment that it is not appropriate to separate compressors into equipment classes. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

Pursuant to EPCA, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE determines are appropriate. (42 U.S.C. 6295(q) and 42 U.S.C. 6316(a)) DOE shares the view of commenters arguing that cooling method offers utility to the end user. Whereas air-cooled compressors may shed heat to the ambient environment, liquid-cooled compressors require a source of cooling liquid from an external system, which not all applications may have. Conversely, compressors operating in warm environments may be thermally limited and unable to operate at full capacity, and end users may improve compressor performance by opting for liquid cooling if the possibility exists. In either case, cooling method offers utility to the consumer.

Performance

ASAP, the CA IOUs and Edison Electric Institute supported the creation of equipment classes by cooling method, with the CA IOUs arguing that combining the two equipment classes would effectively lower the standard for liquid-cooled compressors. (CA IOUs, No. 0059 at pp. 3–4) ASAP and Edison Electric Institute further commented that a single efficiency level for both cooling methods would result in the elimination of air-cooled compressors, which are less efficient, from the market. (NEEA and NWPCC, No. 0057 at p. 3; Edison Electric Institute, Public Meeting Transcript, No. 0044 at pp. 23–24)

Sullair suggested that DOE merge the liquid-cooled equipment class with the air-cooled equipment class and apply the proposed standards of the air-cooled class; liquid-cooled compressors are low volume and tend to have better efficiency than air-cooled compressors. (Sullair, No. 0056 at pp. 13–14) Similarly, Sullivan-Palatek commented that liquid-cooled compressors are produced in low volumes and, as such, should not have their own equipment class and should be held to the air-cooled compressor standards. (Sullivan-Palatek, No. 0051 at p. 6; Sullivan-Palatek, Public Meeting Transcript, No. 0044 at p. 24) Sullair also noted that liquid-cooled compressors are generally more efficient than air-cooled compressors and would not encounter difficulty in meeting standards derived from air-cooled compressors. Furthermore, Sullair noted that integration with other infrastructure such as heat recovery could be discouraged because the liquid-cooled standard is more stringent. (Sullair, No. 0056 at pp. 13–14)

Atlas Copco pointed out that the efficiency difference between cooling methods for lubricated compressors is small, which is why the draft EU standards for compressors propose the same standard levels for air-cooled and liquid-cooled lubricated compressors. (Atlas Copco, Public Meeting Transcript, No. 0044 at pp. 24–25)

CAGI commented that the efficiency of a compressor is not dictated by cooling method and, thus, compressors should not be separated into equipment classes based on cooling method. (CAGI, No. 0052 at p. 10; CAGI, Public Meeting Transcript, No. 0044 at p. 22) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1;Sullivan-Palatek, No. 0051 at p. 1)

DOE shares ASAP, the CA IOUs, Edison Electric Institute, Atlas Copco, Sullivan-Palatek and Sullair's viewpoint that cooling method does affect efficiency. In doing so, DOE disputes CAGI's claim that compressor efficiency is unaffected by cooling method if measured at the package level, as

[45] The performance data was obtained from data sheets published through the CAGI Performance Verification Program: *www.cagi.org/performance-verification/.*

[46] For a list of manufacturers currently participating in the CAGI Performance Verification Program, please this website: *www.cagi.org/performance-verification/data-sheets.aspx.* Note that Chicago Pneumatic and Quincy are subsidiaries of Atlas Copco.

[47] EL 2 represents the standard level proposed for this equipment in the energy conservation standards NOPR. See section IV.C.5 for more information on efficiency levels.

[48] EL 3 represents the approximate middle of the market, with respect to efficiency. See section IV.C.5 for more information on efficiency levels.

[49] See chapter 3 of the TSD for more information on this analysis.

specified by DOE's test procedure final rule. Specifically, air-cooled compressors may employ additional fans or other energy-consuming technology that could be superfluous for a liquid-cooled compressor. The effect of air cooling on energy consumption appears directly in the CAGI Performance Verification Program data, which indicates that liquid-cooled compressors achieve greater isentropic efficiencies than air-cooled compressors of otherwise equivalent design. DOE discusses the relationship between the package isentropic efficiencies of air- and liquid-cooled compressors in section IV.C.5.a of this document.

In specific response to Sullair's comment, DOE does not anticipate that an end user's decision to employ heat recovery will be affected by energy conservation standards for liquid-cooled compressors. Instead, DOE believes an end user's decision will continue to be made based on whether the application site has use for waste heat. Specifically, in the energy conservation NOPR, DOE proposed efficiency levels for liquid-cooled compressors that conservatively accounted for this difference in efficiency.[50] 81 FR 31680, 31710–31711 (May 19, 2016). Further, according to the testing configuration established in the test procedure final rule, DOE does not require manufacturers to install heat recovery equipment during certification testing. For these reasons, DOE concludes that the efficiency levels established in the NOPR provide no advantage or disadvantage to liquid-cooled systems that employ heat recovery equipment.

Based on the aforementioned discussion of differences in efficiency and utility between air-cooled and liquid-cooled compressors, DOE concludes that separate equipment classes are warranted and justified, and DOE is adopting separate equipment classes for air- and liquid-cooled compressors in this final rule.

Substitution Risk

Sullair noted that certain cooling designs, such as hybrid systems, would be difficult to classify, leading to loopholes. (Sullair, No. 0056 at pp. 13–14) CAGI stated that an end user's decision on cooling method is based on site-specific capabilities. (CAGI, No. 0052 at p. 10; CAGI, Public Meeting Transcript, No. 0044 at p. 22) This position was supported by ASAP based on information provided by industry at the public meeting. (ASAP, Public Meeting Transcript, No. 0044 at p. 24) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

DOE acknowledges Sullair's concern that certain equipment may be of hybrid design, and is updating its definitions for the final rule to address those cases so that an incentive to substitute such equipment does not arise. See III.A.2 for details. DOE interprets CAGI's and ASAP's arguments to mean that an end user's choice of cooling method is made largely due to site-specific factors and infers that substitution is unlikely to occur, especially at the standard levels adopted in this final rule. Therefore, DOE continues to believe that it is appropriate to establish separate equipment classes and corresponding standards, as is done in this final rule.

Certification and Compliance Burden

In response to the energy conservation standards NOPR, Sullair commented that certifying based on cooling method would be burdensome to two different equipment classes and suggested that DOE merge the liquid-cooled equipment class with the air-cooled equipment class and apply the proposed standards of the air-cooled class. (Sullair, No. 0056 at pp. 13–14)

DOE disagrees that separate equipment classes for liquid-cooled and air-cooled compressors would lead to significant increases in compliance burden. The DOE test procedure allows manufacturers to use a testing-based sampling plan or AEDMs to determine the performance of a compressor. Manufacturers can use AEDMs to model the performance of compressors with lower sales volumes based on compressors with higher sales volumes, thereby reducing the burden of testing. In the case of liquid-cooled and air-cooled compressors, the similarities between models, as noted by Sullivan-Palatek, would allow for relatively straightforward modeling of liquid-cooled models based on test data from otherwise-similar air-cooled models.

Additionally, in the test procedure final rule, DOE defines basic model to mean all units of a class of compressors manufactured by one manufacturer, having the same primary energy source, the same compressor motor nominal horsepower, and essentially identical electrical, physical, and functional (or pneumatic) characteristics that affect energy consumption and energy efficiency. 81 FR 27220, 27243 (May 5, 2016). As discussed previously, air- and liquid-cooled compressors clearly have different characteristics that affect energy consumption and efficiency. Consequently, even if liquid- and air-cooled compressors were combined into a single equipment class, as requested by commenters, analogous liquid- and air-cooled compressors would be classified as separate basic models and thus require separate certification. Therefore, combining air- and liquid cooled compressors into one equipment class will not reduce the incremental testing burden.

g. List of Equipment Classes

In the energy conservation standards NOPR, DOE proposed a list of equipment classes and associated equipment class designations. 81 FR 31680, 31700 (May 19, 2016). Based on the discussion in this section, and the scope of this final rule as discussed in section III.B, there are four equipment classes in this final rule. DOE's list of equipment classes for this final rule is provided in Table IV.1.

TABLE IV.1—LIST OF EQUIPMENT CLASSES

Compressor type	Lubrication type	Cooling method	Driver type	Motor phase	Equipment class designation
Rotary	Lubricated	Air-cooled	Fixed-speed	Three-phase	RP_FS_L_AC
		Liquid-cooled			RP_FS_L_WC
		Air-cooled	Variable-speed		RP_VS_L_AC
		Liquid-cooled			RP_VS_L_WC

[50] See section 5.7.5.1 of the NOPR TSD here: *www.regulations.gov/document?D=EERE-2013-BT-STD-0040-0037.*

2. Technology Options

In the energy conservation standards NOPR, DOE discussed design options as in three general categories, rather than as independent individual strategies. This is because technology options are, in some cases, able to be deployed independently (*e.g.,* cooling fan efficiency), and in other cases require coordination (*e.g.,* using a more efficient motor). Instead of a bottom-up approach, wherein DOE could attempt to assign a characteristic improvement to each technology option, DOE proposed a top-down approach, wherein the primary consideration is the overall package efficiency and the associated overall cost required to achieve that efficiency. Instead of independent options, DOE generally considered all efficiency improvement to come from a package redesign. This package redesign can be thought of as including three broad categories of improvements:

- Multi-staging;
- air-end improvement; and
- auxiliary component improvement.

81 FR 31680, 31701–31703 (May 19, 2016).

DOE received no comment in response to its characterization of compressor technology options. As a result, in this final rule, DOE is making no changes to its characterization of compressor technology options. The following sections summarize the package redesign options that were originally discussed in the energy conservation standards NOPR. (81 FR 31680, 31701–31703)

a. Multi-Staging

Compressors ingest air at ambient conditions and compress it to a higher pressure required by the specific application. Compressors can perform this compression in one or multiple stages, where a stage corresponds to a single air-end and offers the opportunity for heat removal before the next stage. Units that compress the air from ambient to the specified design pressure of the compressor in one stage are referred to as single-stage compressors, while units that use multiple stage are referred to as multistage compressors.

The act of compression generates inherent heat in a gas. If the process occurs quickly enough to limit the transfer of that heat to the environment, the compression is known as ''adiabatic.'' By contrast, compression may be performed slowly, such that heat flows from the gas at the same rate at which it is generated and such that the temperature of the gas never exceeds that of the environment. This process is called ''isothermal.'' DOE notes that a hotter gas is conceptually ''harder'' to compress; the compressor must overcome the heat energy present in the gas in order to continue the compression process. As a result, compression to a given volume requires less work if performed isothermally. ''Real'' (*i.e.,* not idealized in any respect) compressors are neither adiabatic nor isothermal, and dissipate some portion of compressive heat during the process. If a compressor is able to dissipate more heat, the resulting act of compression becomes easier and the compressor requires less input energy.

Multi-stage compressors are specifically designed to take advantage of this principle and split the compression process into two or more stages (each performed using a single air-end) to allow heat removal between the stages using a heat-exchange device sometimes called an ''intercooler.'' The more stages used, the closer the compressor behavior comes to the isothermal ideal. Eventually, however, the benefits to adding further stages diminish; gains from each marginal stage are countered by the inherent inefficiencies of using smaller compressor units. Depending on the specific pressure involved, the optimal number of stages may vary widely. Most standard industrial air applications, however, do not use more than two stages.

In response to the 2012 proposed determination of coverage, Ingersoll Rand stated that two-stage compression technology can offer an improvement in efficiency of 12- to 15-percent when compared to single-stage compression. (Docket No. EERE–2012–BT–DET–0033, Ingersoll Rand, No. 0004 at pp. 3–4). DOE considers multistaging to be a valid path to higher efficiency, and has included performance data from single-stage and multistage compressors alike in its analysis.

b. Air-End Improvement

The efficiency of any given air-end depends upon a number of factors, including:

- Rated compressor output capacity;
- compression chamber geometry;
- operating speed;
- surface finish;
- manufacturing precision; and
- designed equipment tolerances.

Each individual air-end has a best-efficiency operating point based upon the characteristics listed. However, because air-ends can operate at multiple flow rates, manufacturers commonly utilize a given air-end in multiple compressor packages to reduce overall costs. This results in air-ends operating outside of the best-efficiency point. Using one air-end in multiple compressor packages reduces the total number of air-ends a manufacturer needs to provide across the entire market, reducing costs at the price of reduced efficiency for those packages operating outside of the best efficiency point for the air-end. However, a manufacturer could redesign and optimize air-ends for any given flow rate and discharge pressure, increasing the overall efficiency of the compressor package.

Manufacturers can use two viable design pathways to increase compressor efficiency via air-end improvement. The first is to enhance a given air-end design's properties that affect efficiency, which could include manufacturing precision, surface finish, mechanical design clearances, and overall aerodynamic efficiency. The second is to more appropriately match air-ends and applications by building an overall larger number of air-end designs. As a result, a given air-end will be used less frequently in applications requiring it to operate further from its optimal operating point. These two practices may be employed independently or jointly; the option that is prioritized will depend on the specifics of a manufacturer's equipment line and the ultimate efficiency level sought.

c. Auxiliary Component Improvement

As discussed in the previous section, compressor manufacturers normally use one air-end in multiple compressor packages that are designed to operate at different discharge pressures and flow rates. Each compressor package consists of multiple design features that affect package efficiency, including valves, piping system, motor, capacity controls, fans, fan motors, filtration, drains, and driers. This equipment, for example, may control the flow of air, moisture, or oil, or the temperature and humidity of output air, or regulate temperature and other operating parameters. Compressor manufacturers do not normally provide end users with the option to replace any individual part of a compressor package to increase efficiency, as each feature also has a direct effect on compressor performance. However, improving the operating characteristics of any of these ''auxiliary'' parts may offer a chance to improve the overall efficiency of the compressor package.

For example, package isentropic efficiency can be increased by reducing the internal pressure drop of the package using improved valves and pipe systems, or by improving the efficiency of (1) both the drive and fan motors (if present), (2) the fan, itself (if present),

(3) condensate drains, (4) both air and lubricant filters, and (5) controls. The improvement must be considered relative to a starting point, however. Even if the modifications could be deployed independently of each other, and not all can, the spread of efficiencies available in the market likely already reflects the more cost-effective choice for improving efficiency at any given point. Perhaps one manufacturer, by virtue of features of its product lines, finds that reaching a given efficiency level in a particular equipment class is most cost-effectively done by improving Technology X. Another may find that it is more cost effective to improve Technology Y. Both could be correct because each may have had a different starting point. Adding to this difficulty in ascertaining exactly when a given technology should be deployed (as with a bottom-up technology option approach) is the manufacturing reality that it is not cost-effective to offer an infinite number of combinations and equipment sizes. Perhaps a compressor of output level between two others would most optimally use a fan sized specifically for that compressor. Because it is not cost effective for that compressor's manufacturer to stock another fan size, however, the compressor ends up sub-optimally using a fan either slightly too large or slightly too small, both at some cost to efficiency. Thus, less may be learned by scrutinizing the design choices of a specific model than is learned by considering the overall spread of costs and efficiencies available in the market at large.

Because the compressor packages function as an ensemble of complementary parts, changing one part often leads to changing others. A special case may come with more-efficient electric motors. Compressors normally use induction motors, which generally vary operating speed as efficiency is improved. Using a more efficient (but otherwise identical) induction motor without considering the rest of the compressor design could be counterproductive if the gains in motor efficiency were more than offset by subsequent loss in performance of the air-end and other parts. DOE's proposal assumes that the best-performing compressors on the market are built using the most-efficient available electric motors that are suited to the task. However, it could not confirm instances of a manufacturer using ''super premium'' or ''IE4'' induction motors, which appear to only recently have been made available commercially.[51] The terms ''super premium'' and ''IE4'' have been used in the United States and in Europe, respectively, to describe the motor industry's next tier of efficiency. Possible reasons for this include the motors not being suitable for use in compressors, manufacturers still exploring the relatively new motors and not yet having introduced equipment redesigned to make use of them, or that manufacturers are already, using the motors in the most efficient compressor offerings.

As an example of the influence of auxiliary componentry on compressor efficiency, in the test procedure final rule, DOE presents two lists of ancillary equipment to describe compressor configuration requirements. The first includes ancillary equipment that must be included as part of a compressor package when testing, regardless of whether it is distributed in commerce with the basic model under test; the second list contains ancillary equipment that is only required if it is distributed in commerce with the basic model under test. Any ancillary equipment on these lists may affect efficiency, and these lists illustrate the set of ancillary equipment that needs to function harmoniously for the package to perform well.

TABLE IV.2—LIST OF EQUIPMENT REQUIRED DURING TEST

Equipment	Fixed-speed rotary air compressors	Variable-speed rotary air compressors
Driver	Yes	Yes.
Bare compressors	Yes	Yes.
Inlet filter	Yes	Yes.
Inlet valve	Yes	Yes.
Minimum pressure check valve/backflow check valve	Yes	Yes.
Lubricant separator	Yes	Yes.
Air piping	Yes	Yes.
Lubricant piping	Yes	Yes.
Lubricant filter	Yes	Yes.
Lubricant cooler	Yes	Yes.
Thermostatic valve	Yes	Yes.
Electrical switchgear or frequency converter for the driver	Yes	Not applicable.*
Device to control the speed of the driver (e.g., variable-speed drive)	Not applicable**	Yes.
Compressed air cooler(s)	Yes	Yes.
Pressure switch, pressure transducer, or similar pressure-control device.	Yes	Yes.
Moisture separator and drain	Yes	Yes.

* This category is not applicable to variable-speed rotary air compressors.
** This category is not applicable to fixed-speed rotary air compressors.

TABLE IV.3—LIST OF EQUIPMENT REQUIRED DURING TEST, IF DISTRIBUTED IN COMMERCE WITH THE BASIC MODEL

Equipment	Fixed-speed rotary air compressors	Variable-speed rotary air compressors
Cooling fan(s) and motors	Yes	Yes.
Mechanical equipment	Yes	Yes.
Lubricant pump	Yes	Yes.
Interstage cooler	Yes	Yes.

[51] One manufacturer, for example, describes its IE4 offerings here: *www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0040-0033.*

TABLE IV.3—LIST OF EQUIPMENT REQUIRED DURING TEST, IF DISTRIBUTED IN COMMERCE WITH THE BASIC MODEL—Continued

Equipment	Fixed-speed rotary air compressors	Variable-speed rotary air compressors
Electronic or electrical controls and user interface	Yes	Yes.
All protective and safety devices	Yes	Yes.

B. Screening Analysis

DOE uses the following four screening criteria to determine which technology options are suitable for further consideration in an energy conservation standards rulemaking:

(1) *Technological feasibility.* Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production and reliable installation and servicing of a technology in commercial products could not be achieved on the scale necessary to serve the relevant market at the time of the projected compliance date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility or product availability.* If it is determined that a technology would have significant adverse impact on the utility of the product to significant subgroups of consumers or would result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the United States at the time, it will not be considered further.

(4) *Adverse impacts on health or safety.* If it is determined that a technology would have significant adverse impacts on health or safety, it will not be considered further. 10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b)

In sum, if DOE determines that a technology, or a combination of technologies, fails to meet one or more of the above four criteria, it will be excluded from further consideration in the engineering analysis. The reasons for eliminating any technology are discussed below.

The subsequent sections include DOE's evaluation of each technology option against the screening analysis criteria, and whether DOE determined that a technology option should be excluded (''screened out'') based on the screening criteria.

1. Screened-Out Technologies

In the energy conservation standards NOPR, DOE was not able to identify technology options that would fail the screening criteria. 81 FR 31680, 31703 (May 19, 2016). DOE received no comments related to the technology options and screening analysis presented in the energy conservation standards NOPR. As a result, DOE is making no changes to its screening analysis in this final rule.

2. Remaining Technologies

Through a review of each technology, DOE concludes that all of the other identified technologies listed in section IV.A.1.g met all four screening criteria. In summary, DOE did not screen out the following technology options:

- Multi-staging
- air-end improvement
- auxiliary component improvement

DOE determined that these technology options are technologically feasible because they are being used, or have previously been used, in commercially available products or working prototypes. DOE also finds that all of the remaining technology options meet the other screening criteria (*i.e.,* practicable to manufacture, install, and service and do not result in adverse impacts on consumer utility, product availability, health, or safety).

C. Engineering Analysis

In the engineering analysis, DOE describes the relationship between manufacturer selling price (MSP) and improved compressor package isentropic efficiency. This relationship serves as the basis for cost-benefit calculations for individual end users, manufacturers, and the Nation. DOE conducted the engineering analysis for this rulemaking using an efficiency level approach. The efficiency level approach uses estimates of costs and efficiencies of equipment available on the market at distinct efficiency levels to develop the cost-efficiency relationship. The efficiency levels in this analysis range from that of the least-efficient compressor sold today (*i.e.,* the baseline) to the maximum technologically feasible efficiency level. At each efficiency level examined, DOE determines the MSP; this relationship is referred to as a cost-efficiency curve.

In the following sections, DOE summarizes the engineering analysis presented in the NOPR, addresses potential changes to the analysis resulting from the test procedure final rule, discusses comments received, presents analytical changes in response to comments, and summarizes the cost-efficiency results passed to the downstream economic analyses.

1. Summary of Data Sources

In the energy conservation standards NOPR, DOE discussed several sources of data that it used in the engineering analysis. Specifically, DOE discussed the CAGI Performance Verification Program data, the European Union Lot 31 Ecodesign Preparatory Study on Electric Motor Systems/Compressors (hereafter ''Lot 31 study,'' which is discussed in section IV.C.1.b), confidential U.S. MSP data, and the online retailer price database; these sources are discussed in the following sections. Chapter 5 of the final rule TSD contains further detail on these data sources, beyond what is discussed in this document.

a. CAGI Performance Verification Program Data

CAGI's Performance Verification Program provides manufacturers a standardized test method and performance data reporting format for rotary compressors. In the energy conservation standards NOPR, DOE compiled the information contained in every CAGI Performance Verification data sheet available from the websites of individual manufacturers into one database, and referred to this as the ''CAGI database'' throughout the NOPR.[52] As part of this final rule, DOE compiled information from newly available CAGI data sheets, as well as updated data sheets from the same compressor models, and compiled them into a new database; this is referred to as the ''updated CAGI database'' in this final rule.

[52] For more information regarding CAGI's Performance Verification Program, please see: *www.cagi.org/performance-verification/.*

b. European Union Lot 31 Study

As described in the energy conservation standards NOPR, the European Union Ecodesign directive established a framework under which manufacturers of energy-using products are obliged to reduce the energy consumption and other negative environmental impacts occurring throughout the product life cycle.[53] Air compressors were examined in the Lot 31 study. Lot 31 published a final report in June 2014 [54] and a draft regulation for standards for air compressors (''Lot 31 draft regulation'').[55] 81 FR 31680, 31700–31701 (May 19, 2016).

In the energy conservation standards NOPR engineering analysis, DOE used several relationships developed in the Lot 31 study. The first relationship represented the market average package isentropic efficiency, as a function of output flow, for each compressor variety; this relationship is referred to herein as the ''Lot 31 regression curve.'' The second relationship, the ''Lot 31 regulation curve,'' was scaled from each Lot 31 regression curve using ''d-values.'' The d-values describe the percent reduction in losses from the regression curve, and establish a Lot 31 regulation curve. 81 FR 31680, 31704 (May 19, 2016).

The Lot 31 study also established relationships among compressor package isentropic efficiency, output flow rate, and list selling price for each compressor variety. List price represents the price paid by the final customer, and can be scaled to estimate MSP by using a constant markup factor. These relationships are referred to as ''Lot 31 MSP-flow-efficiency relationships'' in the NOPR and this final rule. In this final rule, DOE continues to reference the aforementioned relationships from the Lot 31 study, without any modifications. 81 FR 31680, 31704 (May 19, 2016).

c. Confidential MSP and Performance Data

For the energy conservation standards NOPR analysis, DOE's contractor collected MSP and performance data for a range of compressor sizes and equipment classes from manufacturers. This data is confidential and subject to a nondisclosure agreement between the DOE contractor and the manufacturers. Data collected included pressure, flow rate, compressor motor nominal horsepower, full-load input power (in kilowatts), motor efficiency, package specific power, and MSP for individual compressor models. Throughout the NOPR and this final rule, these values are referred to as the ''confidential U.S. MSP data.'' 81 FR 31680, 31704 (May 19, 2016). This data is unchanged from the energy conservation standards NOPR.

d. Public Price Data

In the energy conservation standards NOPR, DOE used a database of prices from online retailers, referred to as the ''online retailer price database.'' 81 FR 31680, 31704 (May 19, 2016). DOE did not use this database in this final rule, because it was used to develop relationships for reciprocating compressors, which are not analyzed as part of this final rule.

2. Impacts of Test Procedure on Source Data

Ingersoll Rand and Kaeser Compressors commented that the publicly available data and data submitted by manufacturers to the department represent what they consider a ''standard'' compressor package, which does not encompass all of the ancillary equipment defined in the test procedure. (EERE–2014–BT–TP–0054, Ingersoll Rand, Public Meeting Transcript, No. 0016 at p. 36; Kaeser Compressors, Public Meeting Transcript, No. 0044 at p. 49)

DOE made several modifications in the test procedure final rule, such that the set of compressor ancillary equipment required for testing are now explicitly specified. As discussed in the test procedure final rule, the equipment configuration for testing now aligns with current industry practice. Therefore, in this final rule, DOE is basing analysis on the updated CAGI database without modification.

Additionally, DOE received many comments from interested parties that were concerned that the data DOE used to develop efficiency levels and ultimately propose energy conservation standards was not reflective of the sampling plan adopted in the test procedure final rule. DOE notes that these comments are directly addressed in section III.D of this final rule.

3. Representative Equipment

In the energy conservation standards NOPR, DOE selected representative pressures as the basis for developing the relationship between manufacturer selling price and package isentropic efficiency. Specifically, DOE chose 125 psig for the rotary equipment classes and 175 psig for the reciprocating equipment classes because they represented the majority of equipment in the CAGI database and online retailer database, respectively. 81 FR 31680, 31704–31705 (May 19, 2016).

Sullair commented that it agreed with the proposed representative pressures, but clarified that the pressures listed on CAGI data sheets is not a proxy for the market. Sullair further stated that the bulk of the market is at 100 and 125 psig. (Sullair, Public Meeting Transcript, No. 0044 at p. 42) DOE agrees with Sullair that availability of compressor models at certain pressures does not represent shipments by pressure. However, as discussed in the energy conservation standards NOPR, DOE used the data sheets to determine a representative pressure for the engineering analysis, which was the most common pressure available. The representative pressure and data used to determine it does not to represent a market distribution or a specific percentage of shipments at that representative pressure. Based on the support from Sullair's comment and for the reasons presented in the energy conservation standards NOPR, DOE retains in this final rule the representative discharge pressure of 125 psig as a basis for determining MSP-efficiency relationships for rotary compressors.

Kaeser Compressors and Ingersoll Rand commented that reciprocating compressors run cyclically, typically starting at 125 psig and stopping at 175 psig. (Kaeser Compressors, Public Meeting Transcript, No. 0044 at p. 43; Ingersoll Rand, Public Meeting Transcript, No. 0044 at p. 44) Ingersoll Rand expanded on their comment, stating that it would be more appropriate to choose a much lower representative pressure than the ''start'' pressure of 175 psig. (Ingersoll Rand, Public Meeting Transcript, No. 0044 at pp. 45–46)

Compressed Air Systems commented that reciprocating compressors can operate at a range of pressures and selecting one pressure to evaluate its efficiency may be inappropriate as that is not how the compressors designed to operate. (Compressed Air Systems, Public Meeting Transcript, No. 0044 at pp. 43–44) Compressed Air Systems stated that testing compressors at the representative pressure of 175 psig may be unsafe for some compressors to do safely. (Compressed Air Systems, No. 0061 at p. 3)

[53] Source: *www.eceee.org/ecodesign/products/Compressors.*

[54] For copies of the Lot 31 Final Report on Compressors, please go to: *www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0040-0031.*

[55] For copies of the EU draft regulation: *www.regulations.gov/contentStreamer?documentId=EERE-2013-BT-STD-0040-0031&disposition=attachment&contentType=pdf.*

As discussed in section III.B.2, DOE is excluding reciprocating compressors from the scope of this final rule, and therefore is not asserting any conclusions regarding representative equipment configurations for reciprocating compressors at this time. DOE will consider the aforementioned input if it analyzes standards for reciprocating compressors in a future rulemaking.

4. Design Options and Available Energy Efficiency Improvements

In the energy conservation standards NOPR, DOE identified package redesign as the primary design option available to improve compressor package isentropic efficiency and described multi-staging, air-end improvement, and auxiliary component improvement as specialized cases of package redesign. 81 FR 31680, 31705 (May 19, 2016). As discussed in section IV.B in this final rule, package redesign remains the only design option considered in this engineering analysis. Consistent with the energy conservation standards NOPR, in this final rule, DOE is using an efficiency level approach, focusing on the total efficiency observed at various price levels rather than attempting to quantify the impact on package isentropic efficiency of all of the subcomponents that form a compressor package.

5. Efficiency Levels

In the energy conservation standards NOPR, DOE established and analyzed six efficiency levels and a baseline to assess the relationship between MSP and package isentropic efficiency. 81 FR 31680, 31705 (May 19, 2016). In this final rule, the engineering analysis remains generally the same as presented in the energy conservation standards NOPR. However, the following sections describe specific modifications to the NOPR analysis that DOE made in response to interested party comments.

a. Air-Cooled and Liquid-Cooled Scaling Relationships

In the energy conservation standards NOPR, DOE proposed efficiency levels for liquid-cooled equipment classes established by scaling analogous air-cooled efficiency levels. DOE developed this scaling relationship using the CAGI database and accounted for the differences in package isentropic efficiency due to the lack of a fan motor in liquid-cooled equipment. 81 FR 31680, 31710 (May 19, 2016).

Sullair commented that DOE's approach to scale liquid-cooled equipment classes from air-cooled using a fixed variable may not be accurate at high and low compressor motor nominal horsepower ranges. (Sullair, Public Meeting Transcript, No. 0044 at pp. 59–60) In response to Sullair's comment, DOE notes that it reduced the compressor motor nominal horsepower scope of the final rule to 10 to 200 hp, as described in section III.B.4.a. Sullair was specifically concerned with the scaling at high and low compressor motor nominal horsepower ranges, including compressors less than 10 nominal hp and greater than 200 nominal hp, which are no longer within scope. For the remaining scope, 10 to 200 nominal hp, DOE examined pairs of air-cooled and liquid-cooled compressors from the updated CAGI database and did not find a strong relationship between the difference in package isentropic efficiency and flow rate. The results of this analysis are provided in chapter 5 of the final rule TSD. For these reasons, DOE maintains the methodology for efficiency level scaling relationships between air-cooled and liquid-cooled equipment classes in this final rule.

Finally, DOE re-evaluated the constant used for the scaling relationships using the updated CAGI database. DOE found similar results that supported the relationship and constant scaling factor proposed in the NOPR, and therefore maintains the scaling relationships proposed in the NOPR. The results of this analysis are provided in chapter 5 of the final rule TSD.

b. Baseline, Max-Tech, and Efficiency Levels

For all equipment classes, the baseline efficiency level characterizes the lowest efficiency equipment present in the market for each equipment class. DOE established baselines in the energy conservation standards NOPR, described by their d-values, for each equipment class using the CAGI database. 81 FR 31680, 31705–31713 (May 19, 2016). DOE received no comments regarding baseline efficiency levels presented in the energy conservation standards NOPR. As noted in section IV.C.1.b, DOE updated the CAGI database using the most recent available data and subsequently re-evaluated the d-values used for the baseline of each equipment class. DOE compared the baselines proposed in the NOPR to the updated CAGI database, and concluded that the baselines accurately represent the new data. Therefore, DOE adopts the baselines used in the NOPR for all equipment classes. The results of this analysis are provided in chapter 5 of the final rule TSD.

For all equipment classes, the max-tech efficiency level (EL 6) represents the highest efficiency level possible for an equipment class. DOE established max-tech efficiency levels, represented by d-values, for each equipment class using the CAGI database in the NOPR. 81 FR 31680, 31705–31713 (May 19, 2016). DOE received no comments regarding max-tech efficiency levels presented in the energy conservation standards NOPR. As noted in section IV.C.1.b, DOE updated the CAGI database and subsequently re-evaluated the d-values used for the max-tech efficiency level of each equipment class. DOE compared the max-tech efficiency levels proposed in the NOPR to the updated CAGI database and concluded that the max-tech efficiency levels accurately represent the new data. Therefore, DOE adopts the max-tech efficiency levels used in the NOPR for all equipment classes. The results of this analysis are provided in chapter 5 of the final rule TSD.

DOE received no comments regarding the intermediate efficiency levels presented in the energy conservation standards NOPR. As such, DOE is making no changes to the d-values for ELs 1, 2, 3, 4, and 5 presented in the energy conservation standards NOPR. Chapter 5 of the final rule TSD contains a detailed discussion of baseline, max-tech and efficiency levels.

c. Efficiency Level Relationships

In the energy conservation standards NOPR, DOE proposed equations for efficiency levels based on an analysis of public data, in a manner consistent with the Lot 31 draft regulation for air compressors. DOE summarized the efficiency levels for each equipment class with the following information: An equation for the regression curve, an equation for the efficiency levels, and a d-value used in the equation for efficiency levels. 81 FR 31680, 31705–31713 (May 19, 2016).

DOE received overarching comments regarding the efficiency levels proposed in the energy conservation standards NOPR. Specifically, CAGI and Sullair commented that there was an error in the formula presented at the public meeting. The formulae on these pages include the term $\ln(X)^2$, but should state $\ln^2(X)$. (CAGI, No. 0052 at p. 11; Sullair, No. 0056 at p. 17; Sullair, Public Meeting Transcript, No. 0044 at p. 15; Sullair, Public Meeting Transcript, No. 0044 at p. 148) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei

Compressors, No. 0063 at p. 2; Sullivan-Palatek, No. 0051 at p. 1)

DOE agrees with CAGI and Sullair's comment and notes that the comments point out a typographical error in the NOPR equation structure, which, when corrected, represents the intent of the equations. Therefore, the equations presented in this final rule have been modified to address the typographical error, but these changes have no impact on the analytical results in this final rule.

Additionally, CAGI and Sullair stated that DOE based the efficiency level equations presented in the NOPR on the Lot 31 draft regulation for air compressors, but rounded and truncated some equations coefficients. CAGI and Sullair further stated that the rounding creates a situation where a compressor may meet one proposed efficiency standard, but fail the other. CAGI and Sullair recommend aligning the coefficients in the efficiency level equations with the equations in the Lot 31 draft regulation to prevent this potential issue. (CAGI, No. 0052 at p. 12; Sullair, Public Meeting Transcript, No. 0044 at p. 16; Sullair, No. 0056 at p. 17) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullivan-Palatek, No. 0051 at p. 1)

DOE examined the equations in the Lot 31 draft regulation and found that coefficients used were all reported to the thousandth (*i.e.,* 0.001) and varied between 3 and 5 significant digits. In the energy conservation standards NOPR, DOE presented equations for efficiency levels with 3 significant digits. DOE also notes that in the test procedure final rule, all calculations of package isentropic efficiency must be rounded to the thousandth (*i.e.,* 0.001). DOE's original intent was to align with the equations used in the Lot 31 draft regulation, and DOE is modifying the equations in this final rule to include all significant digits presented in the Lot 31 draft regulation equations. DOE notes that the original, unrounded and untruncated Lot 31 draft regulation equations were used in DOE's energy conservation standards NOPR analysis. As such, this is a typographical change to the presentation of the equations in the regulatory text, and thus this change has no impact on the analytical results in this final rule.

Sullivan-Palatek commented that the efficiency level equations presented in the energy conservation standards NOPR did not seem reasonable, stating that the package isentropic efficiency of a given compressor would not consistently rise with respect to compressor motor nominal horsepower. Sullivan-Palatek suggested that the efficiency level curves should begin to flatten at 100 to 150 nominal hp, meaning that the package isentropic efficiency for a given efficiency level would remain flat beyond 100 or 150 nominal hp. (EERE–2014–BT–TP–0054, Sullivan-Palatek, No. 0007 at p. 3; EERE–2014–BT–TP–0054, Sullivan-Palatek, Public Meeting Transcript, No. 0016 at p. 51)

Additionally, the People's Republic of China noted that it was unreasonable to use a single efficiency curve spanning the range of 1–500 nominal hp as a considered regulation. The People's Republic of China requested that DOE provide the data used to develop this curve in accordance with Article 2.5 of World Trade Organization Agreement on Technical Barriers to Trade, which permits a World trade Organization member to request another member to provide technical justification for a regulation.[56] (P. R. China, No. 0049 at p. 3)

In response to the comments from Sullivan-Palatek and the People's Republic of China, the efficiency levels analyzed in this final rule are all based on Lot 31 regression curves, which were created from empirical data. Specifically, the Lot 31 regression curves were created from CAGI Performance Verification Program data. Further, in the energy conservation standards NOPR, DOE independently confirmed that regressions of the CAGI database performance data would result in curves similar to the Lot 31 regression curves. 81 FR 31680, 31706–31707 (May 19, 2016). DOE notes that Sullivan-Palatek did not provide any supporting data or justification as to why they believed the regression curve shape was incorrect. Additionally, no other interested parties commented on the regression curve shape. For these reasons, in this final rule, DOE makes no further adjustments to the shape of the efficiency level curves.

CAGI and Sullair commented that Table 1 in the May 19, 2016 energy conservation standards NOPR (81 FR 31767) contains an error for the rotary, lubricated, air-cooled, variable-speed compressor equipment class d-value of −10. CAGI and Sullair believe this value should be −15 to align with the rotary, lubricated, water-cooled, variable-speed compressor equipment class d-value. (CAGI, No. 0052 at p. 11; Sullair, No. 0056 at p. 17) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullivan-Palatek, No. 0051 at p. 1) DOE notes that the d-values in Table 1 of the NOPR align with the corresponding EL 2 analyzed in the NOPR engineering analysis. EL 2 for these two equipment classes do not have the same d-value because DOE determined that they have different baseline d-values, based on data in the CAGI database. This results in a different d-value for EL 2, which DOE described as two-thirds of the way between the baseline and EL 3 in the energy conservation standards NOPR. 81 FR 31706 (May 19, 2016). Therefore, DOE concludes that no error was present, and does not make any modifications based on this comment from CAGI and Sullair.

Beyond the changes discussed in this section, DOE uses the same efficiency level relationships proposed in the energy conservation standards NOPR for this final rule. The following sections present the efficiency levels for equipment classes analyzed in this final rule and discuss specific comments from interested parties. As discussed in section III.B, certain air compressors that DOE analyzed in the energy conservation standards NOPR are no longer within the scope of this final rule. Therefore, DOE is only presenting engineering analysis results for equipment within the scope of this rule. Specifically, DOE is only presenting engineering analysis results for fixed- and variable-speed, lubricated, rotary, three-phase compressors within the scope of this rule. Chapter 5 of the final rule TSD contains a detailed discussion of all efficiency level relationships.

RP__FS__L__AC

The regression curve for the rotary, lubricated, air-cooled, fixed-speed equipment class is unchanged from the energy conservation standards NOPR, except for the typographical corrections noted in this section, and is as follows:

[56] Agreement on Technical Barriers to Trade, 1868 U.N.T.S. 120.

$$\eta_{Isen_Regr_RP_FS_L_AC} = -0.00928 \times ln^2(0.4719 \times V_1) + 0.13911 \times ln(0.4719 \times V_1) + 0.27110$$

Equation 1

Where:

$\eta_{Isen_Regr_RP_FS_L_AC}$ = regression curve package isentropic efficiency for the rotary, lubricated, air-cooled, fixed-speed equipment class, and

V_1 = full-load actual volume flow rate (cubic feet per minute).

The efficiency levels for the rotary, lubricated, air-cooled, fixed-speed equipment class are unchanged from the energy conservation standards NOPR. All efficiency levels, are defined by the following equation, in conjunction with the d-values in Table IV.4.

$$\eta_{Isen_STD_RP_FS_L_AC} = \eta_{Isen_Regr_RP_FS_L_AC} + \left(1 - \eta_{Isen_Regr_RP_FS_L_AC}\right) \times d/100$$

Equation 2

Where:

$\eta_{Isen_STD_RP_FS_L_AC}$ = package isentropic efficiency for the rotary, lubricated, air-cooled, fixed-speed equipment class, for a selected efficiency level,

$\eta_{Isen_Regr_RP_FS_L_AC}$ = regression curve package isentropic efficiency for the rotary, lubricated, air-cooled, fixed-speed equipment class, and

d = d-value for each proposed efficiency level, as specified in Table IV.4.

TABLE IV.4—EFFICIENCY LEVELS ANALYZED FOR ROTARY, LUBRICATED, AIR-COOLED, FIXED- SPEED, THREE-PHASE

Efficiency level	d-Value
Baseline	−49
EL 1	−30
EL 2	−15
EL 3	0
EL 4	5
EL 5	13
EL 6	30

RP__FS__L__WC

The efficiency levels for the rotary, lubricated, liquid-cooled, fixed-speed equipment class are derived from the rotary, lubricated, air-cooled, fixed-speed equipment class.

The efficiency levels for the rotary, lubricated, liquid-cooled, fixed-speed equipment class are unchanged from the energy conservation standards NOPR. All efficiency levels are defined by the following equation, in conjunction with the d-values in Table IV.5.

$$\eta_{Isen_STD_RP_\mathrm{FS_L_WC}} = 0.02349 + \eta_{Isen_Regr_\mathrm{RP_FS_L_AC}} + \left(1 - \eta_{Isen_Regr_\mathrm{RP_FS_L_AC}}\right) \times d/100$$

Equation 3

Where:

$\eta_{Isen_STD_RP_\mathrm{FS_L_WC}}$ = package isentropic efficiency for the rotary, lubricated, liquid-cooled, fixed-speed equipment class, for a selected efficiency level,

$\eta_{Isen_Regr_\mathrm{RP_FS_L_AC}}$ = regression curve package isentropic efficiency for the rotary, lubricated, air-cooled, fixed-speed equipment class, and

d = d-value for each proposed efficiency level, as specified in Table IV.5.

TABLE IV.5—EFFICIENCY LEVELS ANALYZED FOR ROTARY, LUBRICATED, LIQUID-COOLED, FIXED- SPEED, THREE-PHASE

Efficiency level	d-Value
Baseline	−49
EL 1	−30
EL 2	−15
EL 3	0
EL 4	5
EL 5	13
EL 6	30

RP__VS__L__AC

The regression curve for the rotary, lubricated, air-cooled, variable-speed equipment class is unchanged from the energy conservation standards NOPR, except for the typographical corrections noted in this section, and is as follows:

$$\eta_{Isen_Regr_RP_VS_L_AC} = -0.01549 \times ln^2(0.4719 \times V_1) + 0.21573 \times ln(0.4719 \times V_1) + 0.00905$$

Equation 4

Where:

$\eta_{Isen_Regr_\mathrm{RP_FS_L_AC}}$ = regression curve package isentropic efficiency for the rotary, lubricated, air-cooled, variable-speed equipment class, and

V_1 = full-load actual volume flow rate (cubic feet per minute).

The efficiency levels for the rotary, lubricated, air-cooled, variable-speed equipment class are unchanged from the

energy conservation standards NOPR. All efficiency levels are defined by the following equation, in conjunction with the d-values in Table IV.6.

$$\eta_{Isen_STD_RP_VS_L_AC} = \eta_{Isen_Regr_RP_VS_L_AC} + \left(1 - \eta_{Isen_Regr_RP_VS_L_AC}\right) \times d/100$$

Equation 5

Where:

$\eta_{Isen_STD_RP_VS_L_AC}$ = package isentropic efficiency for the rotary, lubricated, air-cooled, variable-speed equipment class, for a selected efficiency level,

$\eta_{Isen_Regr_RP_VS_L_AC}$ = regression curve package isentropic efficiency for the rotary, lubricated, air-cooled, variable-speed equipment class, and

d = d-value for each proposed efficiency level, as specified in Table IV.6.

TABLE IV.6—EFFICIENCY LEVELS ANALYZED FOR ROTARY, LUBRICATED, AIR-COOLED, VARIABLE- SPEED, THREE-PHASE

Efficiency level	d-Value
Baseline	−30
EL 1	−20
EL 2	−10
EL 3	0
EL 4	5
EL 5	15
EL 6	33

RP_VS_L_WC

The efficiency levels for the rotary, lubricated, liquid-cooled, variable-speed equipment class are derived from the rotary, lubricated, air-cooled, variable-speed equipment class.

The efficiency levels for the rotary, lubricated, liquid-cooled, variable-speed equipment class are unchanged from the energy conservation standards NOPR. All efficiency levels are defined by the following equation, in conjunction with the d-values in Table IV.7:

$$\eta_{Isen_STD_RP_\mathrm{VS_L_WC}} = 0.02349 + \eta_{Isen_Regr_\mathrm{RP_VS_L_AC}} + \left(1 - \eta_{Isen_Regr_\mathrm{RP_VS_L_AC}}\right) \times d/100$$

Equation 6

Where:

$\eta_{Isen_STD_RP_\mathrm{VS_L_WC}}$ = package isentropic efficiency for the rotary, lubricated, liquid-cooled, variable-speed equipment class, for a selected efficiency level,

$\eta_{Isen_Regr_\mathrm{RP_VS_L_AC}}$ = regression curve package isentropic efficiency for the rotary, lubricated, air-cooled, variable-speed equipment class, and

d = d-value for each proposed efficiency level, as specified in Table IV.7.

TABLE IV.7—EFFICIENCY LEVELS ANALYZED FOR ROTARY, LUBRICATED, LIQUID-COOLED, VARIABLE-SPEED, THREE-PHASE

Efficiency level	d-Value
Baseline	−45
EL 1	−30
EL 2	−15
EL 3	0
EL 4	5
EL 5	15
EL 6	34

6. Manufacturer Selling Price

In the energy conservation standards NOPR, DOE's general approach was to collect public and confidential manufacturer selling price data (in U.S. dollars) for compressors distributed in commerce in the United States, in order to scale relationships established in the Lot 31 study to the U.S. market. 81 FR 31680, 31703–31704, 31713–31718 (May 19, 2016). The following sections discuss interested party comments related to MSP of lubricant-free equipment (section IV.C.6.a), potential overestimation of MSP and its impact on analyses (section IV.C.6.b), the unchanged relationship between air-cooled and liquid-cooled MSP (section IV.C.6.c), and a summary of MSP results (section IV.C.6.d).

a. MSP of Lubricant-Free Equipment Classes

In the energy conservation standards NOPR, DOE analyzed lubricant-free equipment classes. DOE developed a relationship between MSP for lubricated and lubricant-free equipment classes and requested comment on the relationship.

In response, CAGI commented that scaling the MSP of lubricated, air-cooled equipment to determine the MSP of lubricant-free, air-cooled equipment is not justified as there is no proven relationship between lubricant-free MSP and lubricated MSP. (CAGI, No. 0052 at pp. 10–11) Ingersoll Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p. 1; Sullivan-Palatek, No. 0051 at p. 1)

As discussed in section III.B.4, DOE is excluding lubricant-free compressors from the scope of this final rule, and therefore DOE is not asserting any conclusions regarding MSP for lubricant-free compressors at this time.

b. Potential Overestimation of MSP Due to Non-Efficiency-Related Equipment

Sullivan-Palatek stated that customers who order more efficient compressors typically require other optional non-efficiency-related ancillary equipment, which artificially inflates the cost of the more efficient equipment. (Sullivan-Palatek, Public Meeting Transcript, No. 0044 at pp. 63–64; Sullivan-Palatek, Public Meeting Transcript, No. 0044 at p. 67; Sullivan-Palatek, Public Meeting Transcript, No. 0044 at p. 68) Ingersoll Rand supported Sullivan-Palatek's comments. (Ingersoll Rand, Public Meeting Transcript, No. 0044 at pp. 67–68)

In the energy conservation standards NOPR, DOE established MSP-flow-efficiency relationships using the Lot 31 study of MSP-flow-efficiency relationships, and MSPs for compressor packages sold in the United States. As discussed in the NOPR, DOE scaled the Lot 31 study's absolute equipment MSPs to a magnitude that represents MSPs offered in the U.S. market, but maintained the incremental MSP trends established in the Lot 31 study. 81 FR 31680, 31715 (May 19, 2016). The Lot 31 MSP-flow-efficiency relationships were developed using cost data that was

confined to basic packages only, any packages with additional features, such as ''active cooling'' were omitted to reduce complexity of the analysis.[57] Additionally, the Lot 31 study explained that some basic packages have more opportunities to upgrade functions in the future and are more expensive because they have space and material for potential future upgrades.[58] These descriptions indicate that there may be some small costs included in the Lot 31 MSP-flow-efficiency relationships that are not related to efficiency improvements (*e.g.,* costs for extra space in the package for optional components). DOE scaled the Lot 31 MSP-flow-efficiency relationships using U.S. prices of basic compressor packages, as distributed in commerce. In alignment with the Lot 31 study, DOE did not explicitly exclude any costs from more efficient models. Therefore, the MSPs presented in the NOPR engineering analysis represent the total price of the basic package, as distributed in commerce, which is consistent with the Lot 31 methodology.

As discussed in the energy conservation standards NOPR, DOE leveraged the Lot 31 MSP-flow-efficiency relationship because it is based on an analysis which was publicly vetted through the European Union regulation process. At this time (and at the time of the NOPR analysis), no additional data is available that would allow DOE to parse out the impact of certain ancillary equipment on the Lot 31 MSP-flow-efficiency relationship.

DOE understands that the potential slight overestimation of MSP at higher efficiency levels due to non-efficiency-related equipment could affect the results of DOE's analyses. Therefore, DOE has assessed the potential impacts of including costs of optional ancillary equipment that do not affect package isentropic efficiency in the outputs of the engineering analysis. Specifically, potential overestimation of MSP at higher efficiency levels is most likely to produce conservative results at higher efficiency levels, as it overestimates the cost to increase package isentropic efficiency. If incremental MSPs in the NOPR are overestimated, then it follows that corresponding consumer benefits presented in the NOPR are underestimated. In the energy conservation standards NOPR, DOE presented consumer benefits that were positive above the proposed standard level, and revising any potentially overestimated incremental MSPs would only increase the benefits of these levels. 81 FR 31680, 31737–31744 (May 19, 2016). As explained in the NOPR, DOE proposed TSL 2 after walking down to a potential reduction in INPV for manufacturers that DOE concluded was economically justified. Consumer and national benefits were positive from TSL 2 through max-tech for all equipment classes considered in this final rule. 81 FR 31753–31755. Revising any potentially, slightly overestimated incremental MSPs (to lower values) at higher efficiency levels would increase NOPR estimated consumer benefits, with little impact on NOPR-estimated reduction in INPV for manufacturers and, therefore, not change the justification for the standard proposed in the NOPR.

Further, as discussed previously, DOE based the MSPs trends in the energy conservation standards NOPR on trends established in Lot 31 study. DOE does not have cost data which could be used to evaluate how costs of more efficient compressor packages may increase due to non-efficiency-related items. Additionally, commenters did not provide any quantitative data related to this.

Consequently, based on the potential minimal impact of revising MSP-flow-efficiency relationships according to Sullivan-Palatek's comment, and the lack of available cost data to do so, DOE is adopting in this final rule the MSP-flow-efficiency relationships as proposed in the energy conservation standards NOPR.

c. Air-Cooled and Liquid-Cooled MSP Relationships

In the energy conservations standards NOPR, DOE used MSPs for air-cooled equipment classes to represent MSPs for liquid-cooled equipment classes. DOE reasoned that any difference in incremental MSP between air- and liquid-cooled compressors would not be significant, when compared to the incremental MSP of the greater package. Consequently, DOE concluded that the incremental cost and price of efficiency would be the same for both air-cooled and liquid-cooled equipment classes at each efficiency level. 81 FR 31680, 31716–31717 (May 19, 2016). As discussed in section IV.A.1.f, DOE maintains separate equipment classes for air-cooled and liquid-cooled equipment in this final rule.

In response to the NOPR, Sullair commented that generally there is an analogous air-cooled and liquid-cooled compressor for lubricated equipment, and when ignoring the cost of the cooling system, the manufacturer production cost (''MPC'') for each is the same. This mirrors the assumption made in DOE's energy conservation standards NOPR analysis. However, Sullair added that DOE's assumption that the incremental cost of efficiency for air-cooled and water-cooled equipment classes are equal may not work because air-cooled equipment can improve package isentropic efficiency by using premium efficiency fan motors, while liquid-cooled equipment cannot. (Sullair, Public Meeting Transcript, No. 0044 at pp. 65–66)

DOE acknowledges that air-cooled equipment has a technology option that is not available to liquid-cooled equipment (*i.e.,* more-efficient fan motors). In response, DOE assessed the impact of its assumption that any difference in incremental MSP between air- and liquid-cooled systems would not be significant when compared to the incremental MSP of the greater package.

In the energy conservation standards NOPR, DOE derived MSP at each air-cooled efficiency level from empirical pricing data. It is therefore reasonable to assume that the MSP at the baseline level represents compressors with low efficiency fan motors. At each subsequent efficiency level, the likelihood of improved efficiency fan motors increases. As a result, it is reasonable to assume that the empirically based MSPs at each subsequent efficiency level already represent compressors with fan motors of increasing efficiency.

In the energy conservation standards NOPR, DOE established efficiency levels for liquid-cooled compressors at a uniform 2.35 package isentropic efficiency points above the analogous air-cooled efficiency level. As discussed in section IV.C.5.a and the energy conservation standards NOPR, this increase of 2.35 package isentropic efficiency points represents the average difference in package isentropic efficiency between 269 pairs of analogous fixed-speed air-cooled and liquid-cooled models. The air- and liquid-cooled pairs in this analysis represented the range of fan motor efficiency available on the market. Following the logic established by Sullair's comment, theoretically, pairs with lower efficiency fan motors should have greater differences in package isentropic efficiency, and pairs with higher efficiency fan motors should have smaller differences in package isentropic efficiency. Thus, if DOE is to precisely account for improvements in fan motor efficiency (while using the same incremental MSPs for air- and

[57] See the Lot 31 Ecodesign Preparatory Study on Compressors Task 7 section 2.4.1 here: *www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0040-0031.*

[58] Ibid.

liquid-cooled efficiency levels), the increase in package isentropic efficiency between air- and liquid-cooled compressors should be slightly more than 2.35 at baseline and slightly less than 2.35 at max-tech. Such an adjustment would result in liquid-cooled compressors gaining slightly less package isentropic efficiency between each efficiency level, when compared to air-cooled compressors. However, the increase in MSP at each efficiency level would be the same for both air- and liquid-cooled compressors.

DOE quantified the impact of the aforementioned relationship. Data within the updated CAGI database show that most fan motors are less than five percent the size of the compresses motor (*e.g.,* a compressor with a 100 hp motor typically has a fan motor less than 5 hp). One common air-cooled configuration in the updated CAGI database, for example, is a compressor with a compressor motor nominal horsepower of 100 hp and a 3 hp fan motor. The efficiency of 3 hp fan motors typically range from 81.5- to 89.5-percent. With all else held constant, DOE estimates that upgrading from the least efficient fan motor to the most efficient would increase package isentropic efficiency by approximately 0.20 percentage points for a 100 nominal hp compressor. DOE also assessed a 200 nominal hp compressor with a 10 hp fan motor, and found a similar result: package isentropic efficiency increased by approximately 0.18 percentage points. DOE examined this impact for 25 nominal hp compressors, as well. Based on the updated CAGI database, DOE found that 1 hp fan motor are typically associated with 25 nominal hp compressors, and these fan motors ranged from 65.0- to 85.5-percent efficient. This range resulted in an increase in package isentropic efficiency of approximately 0.78 percentage points. Chapter 5 of the final rule TSD contains a detailed discussion of the impact of fan motor efficiency on package isentropic efficiency.

Practically, if DOE were to apply this result to the analysis for a compressor with a compressor motor nominal horsepower of 25 hp, the air- to liquid-cooled offset would range from 2.74 at baseline to 1.96 at max-tech (a range of 0.78 percentage points identified in 25 nominal hp compressors); instead of being a constant 2.35 package isentropic efficiency points. At EL 2, (the standard level proposed in the energy conservation standards NOPR) the offset would be approximately 2.47 points of package isentropic efficiency.[59]

For compressors with a compressor motor nominal horsepower of 100 hp, the air- to liquid-cooled offset would range from 2.45 at baseline to 2.25 at max-tech (a range of 0.20 percentage points identified in 100 nominal hp compressors); instead of being a constant 2.35 package isentropic efficiency points. At EL 2 the offset would be approximately 2.38 percentage points of package isentropic efficiency.[60] Compressor with a motor nominal horsepower of 200 hp would have an almost identical offset, based on DOE's analysis.

DOE asserts that the potential changes to the package isentropic efficiency offset at EL 2, for the example compressors with a compressor motor nominal horsepower of 25, 100, and 200 hp, are very small, and will result in negligible impact on downstream analyses. Specifically, this analysis showed that package isentropic efficiency, for EL 2, for liquid-cooled equipment classes, should be slightly higher (*i.e.,* more stringent) than what was analyzed in the NOPR, while maintaining the same MSP. Revising EL 2 for liquid-cooled equipment classes to be more stringent would increase NOPR estimated consumer benefits, which are positive from TSL 2 through max-tech for all equipment classes considered in this final rule. 81 FR 31753–31755.

Further, revising EL 2 for liquid-cooled equipment classes to be more stringent would have a negligible impact on the estimated reduction in INPV for manufacturers. Specifically, in this scenario, MSP (one of the key inputs to calculating INPV) does not change. With a slightly more stringent EL 2, DOE expects only negligible changes in the number of models failing and shipment estimates (other key inputs to calculating INPV), because the potential change to the efficiency level is so small. As explained in the NOPR, DOE proposed TSL 2 after walking down to a potential reduction in INPV for manufacturers that DOE concluded was economically justified. Therefore, the potential impact of revising EL 2 does not change the justification for the standard proposed in the NOPR.

Further, DOE's analysis shows that efficiency levels above EL 3 for liquid-cooled equipment classes should be slightly lower (*i.e.,* less stringent) than what was analyzed in the NOPR. Therefore, the NOPR analyses would have shown slightly less economic benefits if EL 3 were revised. However, economic benefits were significantly positive at these higher ELs, and ultimately DOE walked down below these levels based on INPV impacts, which similarly to EL 2 would have negligible changes.

As such, DOE maintains its assertion that any difference in incremental MSP between air- and liquid-cooled systems would not be significant, when compared to the incremental MSP of the greater package. Furthermore, implementing such changes, with rigor, adds significant complexity to DOE's analysis, with little-to-no increase in analytical resolution. For these reasons, for this final rule, DOE maintains the relationships between air- and liquid-cooled compressors, for EL 1 through EL 6, as established in the energy conservation standards NOPR.

d. Summary of Manufacturer Selling Price Relationships

Based on the discussions in sections IV.C.6.a, IV.C.6.b, and IV.C.6.c, DOE is adopting the MSP-flow-efficiency relationships in the following sections in this final rule. DOE notes that the relationships for these equipment classes are unchanged from the NOPR analysis. 81 FR 31680, 31714–31717 (May 19, 2016).

RP_FS_L_AC

The MSP-flow-efficiency relationship for the rotary, lubricated, air-cooled, fixed-speed equipment class is as follows:

[59] DOE estimated the offset for 25 hp compressors at EL 2 by linearly interpolating between the offsets and d-values at baseline and EL 3. As such, DOE estimates that the package isentropic efficiency offset should be 2.47 at EL 2, by interpolating between 2.74 (baseline) and 2.35 (EL 3). Chapter 5 of the final rule TSD contains details on this calculation.

[60] DOE estimated the offset for 100 hp compressors at EL 2 by linearly interpolating between the offsets and d-values at baseline and EL 3. As such, DOE estimates that the package isentropic efficiency offset should be 2.38 at EL 2, by interpolating between 2.45 (baseline) and 2.35 (EL 3). Chapter 5 of the final rule TSD contains details on this calculation.

$$MSP_{RP_FS_L_AC} = 0.820 \times \left[(4.72 \times V_1 + 2500) + (136.88 \times V_1 + 10000) \times \eta_{Isen_STD_RP_FS_L_AC}{}^3\right]$$

Equation 7

Where:

$MSP_{RP_FS_L_AC}$ = manufacturer selling price for the rotary, lubricated, air-cooled, fixed-speed equipment class at a selected efficiency level and full-load actual volume flow rate,

$\eta_{Isen_STD_RP_FS_L_AC}$ = package isentropic efficiency for the rotary, lubricated, air-cooled, fixed-speed equipment class, for a selected efficiency level and full-load actual volume flow rate, and

V_1 = full-load actual volume flow rate (cubic feet per minute).

MSP for each efficiency level for the rotary, lubricated, air-cooled, fixed-speed equipment class is presented in Table IV.8 at representative full-load actual volume flow rates.

TABLE IV.8—REPRESENTATIVE MSPS FOR THE RP_FS_L_AC EQUIPMENT CLASS

Efficiency level	Full-load actual volume flow rate (cfm)					
	20*	50	100	200	500	1,000
Baseline	$2,437	$3,350	$4,975	$8,517	$20,350	$41,492
EL 1	2,784	4,007	6,039	10,319	24,243	48,764
EL 2	3,192	4,680	7,063	11,983	27,719	55,158
EL 3	3,742	5,506	8,264	13,877	31,572	62,159
EL 4	3,960	5,818	8,707	14,562	32,943	64,633
EL 5	4,349	6,357	9,460	15,716	35,230	68,739
EL 6	5,349	7,677	11,257	18,414	40,484	78,091

*20 cfm is outside of the scope of this final rule, however the MSP at this point was used for interpolation purposes in downstream analyses.

RP_FS_L_WC

As discussed in section IV.C.6.a, DOE uses the MSP for air-cooled equipment classes to represent MSP for liquid-cooled equipment classes. Therefore, the MSP-flow-efficiency relationship for the rotary, lubricated, liquid-cooled, fixed-speed equipment class is the same as the rotary, lubricated, air-cooled, fixed-speed equipment class. The MSP for each efficiency level for the rotary, lubricated, liquid-cooled, fixed-speed equipment class is presented in Table IV.9 at representative full-load actual volume flow rates.

TABLE IV.9—REPRESENTATIVE MSPS FOR THE RP_FS_L_WC EQUIPMENT CLASS

Efficiency level	Full-load actual volume flow rate (cfm)					
	20	50	100	200	500	1,000
Baseline	$2,437	$3,350	$4,975	$8,517	$20,350	$41,492
EL 1	2,784	4,007	6,039	10,319	24,243	48,764
EL 2	3,192	4,680	7,063	11,983	27,719	55,158
EL 3	3,742	5,506	8,264	13,877	31,572	62,159
EL 4	3,960	5,818	8,707	14,562	32,943	64,633
EL 5	4,349	6,357	9,460	15,716	35,230	68,739
EL 6	5,349	7,677	11,257	18,414	40,484	78,091

RP_VS_L_AC

The MSP-flow-efficiency relationship for the rotary, lubricated, air-cooled, variable-speed equipment class is as follows:

$$MSP_{\mathrm{RP_VS_L_AC}} = 1.302 \times \left[(4.72 \times V_1 + 2500) + (136.88 \times V_1 + 10000) \times \eta_{Isen_STD_\mathrm{RP_VS_L_AC}}{}^3\right]$$

Equation 8

Where:

$MSP_{RP_VS_L_AC}$ = manufacturer selling price for the rotary, lubricated, air-cooled, variable-speed equipment class at a selected efficiency level and full-load actual volume flow rate,

$\eta_{Isen_STD_RP_VS_L_AC}$ = package isentropic efficiency for the rotary, lubricated, air-cooled, variable-speed equipment class, for a selected efficiency level and full-load actual volume flow rate, and

V_1 = full-load actual volume flow rate (cubic feet per minute).

MSP for each efficiency level for the rotary, lubricated, air-cooled, variable-speed equipment class is presented in Table IV.10 at representative full-load actual volume flow rates.

TABLE IV.10—REPRESENTATIVE MSPS FOR THE RP_VS_L_AC EQUIPMENT CLASS

Efficiency level	Full-load actual volume flow rate (cfm)					
	20	50	100	200	500	1,000
Baseline	$3,606	$4,935	$7,577	$13,526	$33,464	$68,234
EL 1	3,818	5,474	8,526	15,189	37,092	75,013
EL 2	4,131	6,139	9,624	17,044	41,031	82,293
EL 3	4,565	6,943	10,883	19,101	45,292	90,093
EL 4	4,834	7,401	11,576	20,209	47,548	94,193
EL 5	5,488	8,437	13,097	22,590	52,317	102,806
EL 6	7,109	10,743	16,314	27,461	61,802	119,743

RP_VS_L_WC

As discussed in section IV.C.6.a, DOE uses the MSP for air-cooled equipment classes to represent MSP for liquid-cooled equipment classes. Therefore the MSP-flow-efficiency relationship for the rotary, lubricated, liquid-cooled, variable-speed equipment class is the same as the as the rotary, lubricated, air-cooled, variable-speed equipment class. The MSP for each efficiency level for the rotary, lubricated, liquid-cooled, variable-speed equipment class is presented in Table IV.11 at representative full-load actual volume flow rates.

TABLE IV.11—REPRESENTATIVE MSPS FOR THE RP_VS_L_WC EQUIPMENT CLASS

Efficiency level	Full-load actual volume flow rate (cfm)					
	20	50	100	200	500	1,000
Baseline	$3,436	$4,332	$6,410	$11,370	$28,574	$58,968
EL 1	3,606	4,935	7,577	13,526	33,464	68,234
EL 2	3,960	5,790	9,056	16,092	39,022	78,589
EL 3	4,565	6,943	10,883	19,101	45,292	90,093
EL 4	4,834	7,401	11,576	20,209	47,548	94,193
EL 5	5,488	8,437	13,097	22,590	52,317	102,806
EL 6	7,218	10,889	16,512	27,755	62,364	120,739

7. Manufacturer Production Cost

In the energy conservation standards NOPR, DOE estimated manufacturer markups based on confidential data gathered during interviews with manufacturers. The markups help to differentiate the manufacturer production cost from the manufacturer selling price of compressors and feed into downstream analyses such as the Manufacturer Impact Analysis. 81 FR 31680, 31718 (May 19, 2016).

In response to DOE's analysis, Atlas Copco commented that there is a large variation in the markups from manufacturer production cost to manufacturer selling price for global and U.S. manufacturers, because global manufacturers may elect to assemble some compressors at non-U.S. facilities. (Atlas Copco, Public Meeting Transcript, No. 0044 at p. 72)

DOE agrees with Atlas Copco's comment that there is variation in markups between different manufacturers. As noted in the NOPR, DOE developed the baseline markup estimates based on confidential data obtained during confidential manufacturer interviews from both global and U.S. based manufacturers. 81 FR 31680, 31718 (May 19, 2016). The markups are intended to represent the industry average, and DOE acknowledges that any individual manufacturer may have different markups.

Additionally, DOE did not receive any new information that could be used to revise the NOPR values for baseline markup estimates or breakdown for manufacturer production cost (MPC) for compressors. Therefore, in this final rule, DOE adopts the estimates for baseline markup estimates and breakdown for MPC for compressors presented in the NOPR.

8. Other Analytical Outputs

In the energy conservation standards NOPR, DOE calculated values for full-load power and no-load power for use in cost-benefit calculations for individual end users, manufacturers, and the Nation. Full-load power was calculated for each equipment class using the formula proposed for package isentropic efficiency in the test procedure NOPR and the outputs of package isentropic efficiency, full-load actual volume flow rate, and pressure from the engineering analysis. DOE used the CAGI database to establish a relationship and calculate values for no-load power based on full-load power. 81 FR 31680, 31718 (May 19, 2016).

DOE received no comments regarding the other analytical outputs discussed in this section. Thus, for the reasons discussed in the energy conservation standards NOPR, in this final rule DOE does not modify the other analytical outputs of the engineering analysis from the NOPR. Chapter 5 of the final rule TSD contains a detailed discussion of these outputs.

D. Markups Analysis

The markups analysis develops appropriate markups (*e.g.,* retailer markups, distributor markups, contractor markups) in the distribution chain and in sales taxes to convert the MSP estimates derived in the

engineering analysis to end user prices. The end user prices are then used in the LCC and PBP analyses and in the manufacturer impact analysis. At each step in the distribution channel, companies mark up the price of the equipment to cover business costs and profit margin. For compressors, the main distribution channels are (1) manufacturers directly to end users, (2) manufacturers to distributors to end users, (3) manufacturers to contractors to end users, and (4) manufacturers to end users through other means. Table IV.12 shows the estimated market shares of each channel, based on compressor capacity.

TABLE IV.12—COMPRESSORS DISTRIBUTION CHAIN

Channel structure	Lubricated rotary positive compressors	
	<500 cfm (%)	≥500 cfm (%)
Manufacturer: User	7.5	20.0
Manufacturer: Distributor/Manufacturer Rep: User	85.0	77.5
Manufacturer: Distributor/Manufacturer Rep: Contractor: User	5.0	2.5
Manufacturer: Other: User	2.5	0.0
Total	100	100

DOE developed separate markups for baseline equipment (baseline markups) and for the incremental cost of more-efficient equipment (incremental markups). Incremental markups are coefficients that relate the change in the MSP of higher efficiency models to the change in the sales price.

To develop markups for the parties involved in the distribution of compressors, DOE utilized several sources, including: (1) The U.S. Census Bureau 2007 *Economic Census Manufacturing Industry Series* (NAICS 33 Series) [61] to develop original equipment manufacturer markups; (2) the U.S. Census Bureau 2012 *Annual Wholesale Trade Survey,* Machinery, Equipment, and Supplies Merchant Wholesalers [62] to develop distributor markups; and (3) 2013 RS Means Electrical Cost Data [63] to develop mechanical contractor markups.

In addition to the markups, DOE derived State and local taxes from data provided by the Sales Tax Clearinghouse. This data represents weighted-average taxes that include county and city rates. DOE derived shipment-weighted-average tax values for each region considered in the analysis.

CAGI commented that it found no errors with DOE's distribution channel and markups assumptions presented in the NOPR. (CAGI, No. 044 Public Meeting Transcript, at p. 94). DOE received no other comments to this approach, therefore; DOE is maintaining the same approach for the final rule as it did in the NOPR.

Chapter 6 of the NOPR TSD provides details on DOE's development of markups for compressors.

E. Energy Use Analysis

The purpose of the energy use analysis is to determine the annual energy consumption of air compressors at different efficiencies in representative U.S. manufacturing and commercial facilities, and to assess the energy savings potential of increased air compressor efficiency. The energy use analysis estimates the range of energy use of air compressors in the field (*i.e.,* as they are actually used by end users). The energy use analysis provides the basis for other analyses DOE performed, particularly assessments of the energy savings and the savings in end user operating costs that could result from adoption of new standards.

Annual energy use of air compressors depends on the utilization of the equipment, which is influenced by air compressor application, annual hours of operation, load profiles, capacity controls, and compressor capacity. DOE calculates the annual energy use as the sum of input power at each load point multiplied by the annual operating hours at each respective load point.

1. Applications

Air compressors operate in response to system demands in three general ways, or applications. DOE determined these applications after examining available field assessment data from two database sources: (1) A database of motor nameplate and field data compiled by the Washington State University (''WSU'') Extension Energy Program, Applied Proactive Technologies (''APT''), and New York State Energy Research and Development Authority (''NYSERDA'') (''WSU/NYSERDA database'') [64] and (2) the Northwest Industrial Motor Database.[65] Based on the distribution of compressor-specific assessments found in these databases, DOE defined three application types to capture statistical variations in air demand and control strategies. DOE defined the three application types as follows:

Trim: Compressors equipped with controls configured to serve fluctuating air demand. The trim application represents either the operation of an individual compressor, or a compressor within a compressor plant, that serves the fluctuating portion of the demand.

Base load: Compressors equipped with controls configured to serve steady-state air demands. The base-load application represents a compressor within a compressor plant that serves the constant portion of fluctuating demand, while the remaining fluctuating portion of demand covered by a trim application.[66]

Intermittent: Compressors equipped with controls configured to serve sporadic loads. For example, these could be operated as back-up compressors for either base-load or trim compressors, or as a dedicated air compressor to a specific process such as sand blasting or fermentation.

Table IV.13 shows the estimated distribution of air compressor application.

TABLE IV.13—DISTRIBUTION OF AIR COMPRESSORS BY APPLICATION

Application	Probability (%)
Trim	50
Base-load	28
Intermittent	22

CAGI commented that based on experience, more than 28-percent of compressors in the field are operating at full usage as base-load compressors. CAGI further commented that rotary compressors are not designed for intermittent use. (CAGI, No. 0044 at p. 82; CAGI, No. 0052 at pp. 5–6) Ingersoll

[61] U.S. Census Bureau (2007). Economic Census Manufacturing Industry Series (NAICS 33 Series). *www.census.gov/manufacturing/asm.*

[62] U.S. Census Bureau (2012). Annual Wholesale Trade Survey, Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238). *www.census.gov/wholesale/index.html.*

[63] RS Means (2013), Electrical Cost Data, 36th Annual Edition (Available at: *www.rsmeans.com*).

[64] The motors database is composed of information gathered by WSU and APT during 123 industrial motor surveys or assessments: 11 motor assessments were conducted between 2005 and 2011 and occurred in industrial plants; 112 industrial motor surveys were conducted between 2005 and 2011 and were funded by NYSERDA and conducted in New York State.

[65] Northwest Industrial Motor Database Summary, 2009, Strategic Energy Group.

[66] Air demand (in cfm) can vary considerably during plant operations. A portion of this air demand may be steady-state, driving equipment that is run constantly, while the remaining portion may be fluctuating.

Rand, Kaeser Compressors, Mattei Compressors, Sullair, and Sullivan-Palatek commented in support of CAGI's recommendations. (Ingersoll Rand, No. 0055 at p. 1; Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2; Sullair, No. 0056 at p.1; Sullivan-Palatek, No. 0051 at p. 1) While CAGI may feel that more than 28-percent of compressors operating in the field are base-load compressors, they did not offer an alternative value. DOE acknowledges that rotary compressors they may not be designed for intermittent use, DOE undemands that rotary compressors may be used in an intermittent fashion in the field. DOE acknowledges that the definition of these applications does have similarities with the way compressors are marketed and distributed in commerce. They are not meant to be literal representations of these occurrences; instead, they are labels used to categorize the statistical variation of the wide range of conditions in which compressors operate in the field.

2. Annual Hours of Operation

In the NOPR DOE constructed a probability distribution of average annual hours of operation (''AHO'') for each of the three application types based on NYSERDA and WSU system assessments data discussed previously, and on the Lot 31 study.

Several stakeholders commented that the annual hours of operation used in the NOPR analysis were too high, resulting in an overstatement of potential savings. Sullivan-Palatek commented that the annual hours of operation were overstated, by as much as a factor of three, and that as compressor capacity (in hp) increases, so do the hours of operation. (Sullivan-Palatek, No. 044 Public Meeting Transcript at pp. 84–85) Atlas Copco commented that the annual hours of operation were overstated for some equipment categories by a factor of two. (Atlas Copco, No. 0054 at pp. 4–5) Jenny Products commented that the annual hours of operations were overstated by a factor of two. (Jenny Products, No. 0058 at p. 3) Ingersoll Rand commented that the annual hours of operation were overstated, and agreed with the distribution of annual hours of operation provided by CAGI. (Ingersoll Rand, No. 0055 at pp. 3–4) Sullair commented that the annual hours of operation were skewed toward compressors operated by heavier industries, and not likely operated by single-shift operations. (Sullivan-Palatek, No. 0044 Public Meeting Transcript at p. 85) Compressed Air Systems commented that annual hours of operation were overstated by 50- to 75-percent (Compressed Air Systems, No. 0061 at p. 5), and that 80-percent of compressors under 250 hp operate 8 to 10 hours per workday. (Compressed Air Systems, No. 0044 at p. 88) Compressed Air Systems agreed that compressors rated at lower capacities would be used less (fewer hours of operation) than those with higher capacities. (Compressed Air Systems, No. 0061 at p. 3) Jenny Products commented that most compressors operate at 2,000 hours per year based on single shift, 8 hours per day, 5 days per week, 50 weeks per year. (Jenny Products, No. 0058 at p. 3) CAGI commented that the operating hours per year is between 2,800 and 4,600 hours. CAGI also provided a distribution of average annual operating hours. (CAGI, No. 0052 at pp. 4–5) Kaeser Compressors and Mattei Compressors commented in support of CAGI's recommendations. (Kaeser Compressors, No. 0053 at p. 1; Mattei Compressors, No. 0063 at p. 2)

The distribution AHO provided by CAGI in response to the NOPR were skewed toward higher operating hours than those estimated by DOE. The weighted averages of the distribution provided by CAGI and DOE's NOPR analysis are 5,166 and 4,081, respectively. Table IV.14 shows the AHO distribution used by DOE in the NOPR compared to that submitted by CAGI.

TABLE IV.14—COMPARISON OF ANNUAL HOURS OF OPERATION

Annual hours of operation	% of Total compressors	
	CAGI	DOE NOPR
<1000	5.6	2.4
1000–2000	5.0	17.1
2001–3000	12.2	9.0
3001–4000	12.1	20.4
4001–5000	12.7	17.1
5001–6000	11.3	19.0
6001–7000	11.2	8.2
7001–8000	10.2	4.6
>8000	19.6	2.1

CAGI's comments did not indicate how AHO changes with compressor capacity. However, Atlas Copco's comment did show how AHO changes by compressor capacity. (Atlas Copco, No. 0054 Appendix B, at p. 2) In response to the analysis provided by Atlas Copco, DOE adjusted average AHO by capacity for the final rule. Table IV.15 shows the average AHO at each capacity range used in this final rule.

TABLE IV.15—AVERAGE ANNUAL HOURS OF OPERATION BY COMPRESSORS CAPACITY

Full-load actual volume flow rate (cfm)	DOE AHO
≥35 to <50	3,385
≥50 to <100	3,238
≥100 to <200	3,308
≥200 to <300	3,346
≥500 to <1000	3,726
≥1,000 to <1250	4,248

3. Load Profiles

Information on typical load profiles for compressors is not available in the public domain. DOE reviewed resources provided by stakeholders, as well as sample compressed air system assessments of commercial and industrial customers. Given the lack of data, DOE developed several load profiles based on how typical compressor applications would likely be employed in the field. Each compressor load profile is approximated by weights that specify the percentage of time the compressor operates at one of four load points: 20-, 40-, 70-, and 100-percent of its duty point airflow.[67] Load profiles are then mapped to each application type to capture compressor operation in the field. The four load profile types are described below.

Flat-load profile: Represents a constant maximum airflow demand. All annual hours of operation are assigned to the duty point airflow. The flat-load profile is used for most base-load applications, and for intermittent applications to represent the event where an intermittent compressor is operating in a base-load role. It can also represent a situation where intermittent demand has been attenuated due to the inclusion of appropriately sized secondary (demand) air receiver storage to the compressed air system.

High-load profile: Represents a high fraction of annual operating hours spent at, or near the maximum airflow demand. The annual hours of operation are distributed across the higher airflow load points. The high-load profile is used to represent most trim applications, and some base-load applications.

Low-load profile: Represents a low fraction of annual operating hours spent at maximum air flow. Annual hours of operation are distributed across the lower airflow load points. Low-load profile, although undesirable, occurs if

[67] DOE assumes that 20-percent is the lowest point at which a compressor will operate before it can be cycled by capacity controls into its Stop or Unload status. See chapter 7 of the TSD for more information on capacity controls.

a single compressor is supplying airflow to a range of tools, with only a small fraction of operating hours at which all of these tools are operating. This profile is used with both trim and intermittent applications.

Even-load profile: Represents an even distribution of annual operating hours spent at each airflow load point. This load profile is a characteristic of trim or intermittent applications.

Table IV.16 shows the percentage of annual operating hours at each of the load points described above for the four load profiles. Table IV.17 shows the assumed probability of each type of load profile being selected for each application type.

TABLE IV.16—FRACTION OF ANNUAL OPERATING HOURS AS A FRACTION OF RATED AIRFLOW

Load point	Load profile (percent)			
	Flat	High	Low	Even
20%	0	0	30	0
40%	0	10	30	33.3
70%	0	40	30	33.3
100%	100	50	10	33.3

TABLE IV.17—DISTRIBUTION OF LOAD PROFILES BY APPLICATION

Application	Load profile	Load profile probability (%)
Trim	Flat	
	Even	40
	Low	40
	High	20
Base-load	Flat	80
	Even	
	Low	
	High	20
Intermittent	Flat	30
	Even	20
	Low	20
	High	30

4. Capacity Control Strategies

Facility demands for compressed air rarely match a compressor's rated air capacity. To account for this discrepancy, some form of compressed air control strategy is necessary. Some forms of capacity control only apply to certain compressor designs and are effective over a limited range of a compressor's capacity. In addition, some capacity controls can be used in combination. As the capacity is regulated, the power required for the compressor to meet the airflow demand will change depending on the chosen control strategy. Chapter 7 of the final rule TSD describes the implemented control in detail with mathematical models for each of the following control strategies: Start/Stop, Load/Unload (2-step), Inlet Valve Modulation, and Variable Displacement. DOE also included the following combined control strategies: Inlet Valve Modulation/Unload, Variable Displacement/Unload, and Multi-step/Unload. DOE modeled these control strategies largely on the following sources: Analysis Methodology Manual for AIRMaster Compressed Air System Audit and Analysis Software,[68] CAGI's Compressed Air and Gas Handbook,[69] and Compressed Air System Controls.[70]

a. Load/Unload

Sullair commented that for compressors with a compressor motor nominal horsepower over 10 hp, stop control is not available without load/unload controls. Further, Sullair commented that there is no variable displacement without variable displacement unload. (Sullair, LLC, No. 0044 at pp. 97) Consequently, DOE updated its analysis and removed start/stop without load/unload for compressors rated over 10 nominal hp and included load/unload with all variable displacement compressors.

Atlas Copco submitted average results, by capacity, showing the average number of running hours per year, and load ratios of a sample of lubricated air compressors in a draft report.[71] (Atlas Copco, No. 0054 Appendix B, at p. 3) From these results DOE was able to adjust the number of hours per year that compressors spend in the unload control state. In the NOPR DOE assumed a fixed 20-percent of time for rotary screw lubricated compressors. The adjusted average value used in this final rule is 40-percent. When applied to the energy use analysis, this results in 40-percent of a compressor's annual operating hours spent in the unload control state.

b. Cycle Energy Requirement

Atlas Copco submitted a second internal report[72] that presented an approach to quantify the energy use of a compressor in the following operating states: (1) When the compressor is in its unloaded control state and transitions into delivering air; and (2) when the compressor stops delivering air and transitions into its unloaded control state (this is also known as ''blow-down''). (Atlas Copco, No. 0054 Annex A, at pp. 5–9) The approach for determining this energy use, called ''cycle energy requirement'' (''CER''), is described in Atlas Copco's comment. (Atlas Copco, No. 0054 Appendix B, at p. 1) Although this approach bears interest, it has not been peer reviewed or accepted by industry. Further, the reports lack the necessary information needed to model the described transitionary states. Additionally, Atlas Copco submitted a technical report[73] indicating that it is possible for a compressor to fractionally cycle through these stages. (Atlas Copco, No. 0054 Annex B, at p. 1) However, the report does not include metrics on the number of cycles that are at each fraction of these stages. For DOE to apply the proposed CER approach in the energy use analysis, these inputs would be required. While DOE acknowledges that energy is used during the transitionary stages outlined in the CER approach, at this time neither DOE nor industry have sufficient information to determine the CER of baseline equipment, or to estimate the decrease in CER as compressor efficiency increases. As such, DOE cannot ascertain the impacts of the submitted approach. Given the uncertainty surrounding this methodology, and given the lack of supporting information, DOE elected not to use the CER methodology for this final rule.

F. Life-Cycle Cost and Payback Period Analyses

DOE conducted LCC and PBP analyses to evaluate the economic impacts on individual end users of potential energy conservation standards for air compressors. The effect of new or amended energy conservation standards on individual end users usually involves a reduction in operating cost and an increase in purchase cost. DOE used the following two metrics to measure end-user impacts:

- The LCC is the total end user expense of an appliance or equipment over the life of that equipment, consisting of total installed cost (manufacturer selling price, distribution chain markups, sales tax, and installation costs) plus operating costs (expenses for energy use, maintenance,

[68] Wheeler, G.M., Bessey, E.G. & McGill, R.D. Analysis Methodology Manual for AIRMaster Compressed Air System Audit and Analysis Software, 1997.

[69] McCulloh, D.M. *Compressed Air and Gas Handbook.* Compressed Air and Gas Institute (CAGI), 2003. at *www.cagi.org.*

[70] Compressed Air Challenge, U.S. DOE, *Compressed Air System Controls,* 1998, at *www.compressedairchallenge.org/library/factsheets/factsheet06.pdf.*

[71] Wouters, C., *Measurement Principle on Cycle Losses,* Atlas Copco, November, 2015.

[72] Wouters, C., *Air Compressors Total Energy Consumption,* Atlas Copco, August, 2016.

[73] Van Nederkassel, L., *The Relation between the Compressor Installation and its Energy Efficiency,* Section 2–2, Compressors, Compressed Air and Vacuum Technology Association, September 2004.

and repair). To compute the operating costs, DOE discounts future operating costs to the time of purchase and sums them over the lifetime of the equipment.

• The PBP is the estimated amount of time (in years) it takes end users to recover the increased purchase cost (including installation) of more-efficient equipment through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost at higher efficiency levels by the change in annual operating cost for the year that amended or new standards are assumed to take effect.

For any given efficiency level, DOE measures the change in LCC relative to the LCC in the no-standards case, which reflects the estimated efficiency distribution of air compressors in the absence of new or amended energy conservation standards. In contrast, the PBP for a given efficiency level is measured relative to the baseline equipment.

For each considered efficiency level in each equipment class, DOE calculated the LCC and PBP for a nationally representative set of air compressors. DOE used data from the NYSERDA and Northwest Industrial Motor Database databases, Lot 31 study and acquired system assessments to define each air compressor's application, load profile, annual hours or operation, and combination of employed controls. For each of the considered air compressors, DOE determined the energy consumption and the appropriate electricity price, thus capturing the variability in energy consumption and energy prices associated with the use of air compressors.

Inputs to the calculation of total installed cost include equipment costs—which includes MPCs, manufacturer markups, retailer and distributor markups, and sales taxes—and installation costs. Inputs to the calculation of operating expenses include annual energy consumption, energy prices and price projections, repair and maintenance costs, equipment lifetimes, and discount rates. DOE created distributions of values for equipment lifetime, discount rates, and sales taxes, with probabilities attached to each value, to account for their uncertainty and variability.

The computer model DOE uses to calculate the LCC and PBP relies on a Monte Carlo simulation to incorporate uncertainty and variability into the analysis. The Monte Carlo simulations randomly sample input values from the probability distributions and air compressor end user sample. The model calculated the LCC and PBP for equipment at each efficiency level for 10,000 end users per simulation run.

DOE calculated the LCC and PBP for all end users as if each were to purchase a new equipment in the expected year of compliance with a new standard. DOE has determined that any standards would apply to air compressors manufactured five years after the date on which any standard is published.[74] Table IV.18 summarizes the approach and data DOE used to derive inputs to the LCC and PBP calculations. The subsections that follow provide further discussion. Details of the spreadsheet model, and of all the inputs to the LCC and PBP analyses, are contained in chapter 8 of the final rule TSD and its appendices.

TABLE IV.18—SUMMARY OF INPUTS AND METHODS FOR THE LCC AND PBP ANALYSIS *

Inputs	Source/method
Equipment Cost	Derived by multiplying MPCs by manufacturer and retailer markups and sales tax, as appropriate. Used historical data to derive a price-scaling index to project equipment costs.
Installation Costs	Baseline installation cost determined with data from stakeholders. Assumed no change with efficiency level.
Annual Energy Use	The total annual energy use multiplied by the hours per year. Average number of hours based on field data calibrated to data submitted by stakeholders.
Energy Prices	Electricity: Marginal prices derived from EEI.[75]
Energy Price Trends	Based on *AEO 2016* price projections.
Repair and Maintenance Costs	Assumed no change with efficiency level.
Equipment Lifetime	Assumed average lifetime of 12.5 years for rotary.
Discount Rates	Approach involves identifying all possible debt or asset classes that might be used to purchase air compressors. Primary data source was the Damodaran Online.
Compliance Date	Late 2021 (2022 for analysis purposes).

* References for the data sources mentioned in this table are provided in the sections following the table or in chapter 8 of the final rule TSD.

1. Equipment Cost

To calculate end user equipment costs, DOE multiplied the MSPs developed in the engineering analysis by the markups described in section IV.D (along with sales taxes). DOE used different markups for baseline equipment and higher efficiency equipment because DOE applies an incremental markup to the increase in MSP associated with higher efficiency equipment. As explained in section IV.D, DOE assumed that compressors are delivered by the manufacturer through one of four distribution channels. The overall markups used in the LCC analysis are weighted averages of all of the relevant distribution channel markups.

To project an equipment price trend for the final rule, DOE derived an inflation-adjusted index of the Producer Price Index for air and gas compressor equipment manufacturers over the period 1984–2013.[76] These data shows a slight decrease from 1989 through 2004. Since 2004, however, there has been an increase in the price index. Given the relatively slow global economic activity in 2009 through 2013, the extent to which a future trend can be predicted based on the last decade is uncertain. Because the observed data does not provide a firm basis for projecting future cost trends for compressor equipment, DOE used a constant price assumption as the default trend to project future compressor prices from 2022. Thus, prices projected

[74] EPCA specifies that the provisions of subsections (l) through (s) of 42 U.S.C. 6295 shall apply to any other type of industrial equipment which the Secretary classifies as covered equipment, which includes compressors. (42 U.S.C. 6316(a)) 42 U.S.C. 6295(l)(2) states that any new or amended standard for any other type of consumer product which the Secretary classifies as a covered product shall not apply to products manufactured within five years after the publication of a final rule establishing such standard. This five-year lead time also applies to other types of industrial equipment, such as compressors.

[75] Edison Electric Institute (EEI), Typical Bills and Average Rates Report Summer, and Winger (2014).

[76] Series ID PCU333911333911; *www.bls.gov/ppi/*.

for the LCC and PBP analyses are equal to the 2014 values for each efficiency level in each equipment class.

DOE received no adverse comments on its NOPR equipment cost estimates, and maintained the same approach for the final rule.

2. Installation Cost

Installation cost includes labor, overhead, and any miscellaneous materials and parts needed to install the equipment. In the NOPR, DOE requested information on whether installation costs would be expected to change with efficiency. Sullair responded that some high efficiency technologies would preclude installation into existing harsh industrial climates and would necessitate the construction of a clean room. (Sullair, LLC, No. 0044 at pp. 106–107) However, Sullair did not specify which high efficiency technologies would make the construction of a clean room for installation necessary, nor did Sullair indicate at which efficiency level this may become an issue. The range of equipment efficiencies presented in this final rule are currently available as ''general purpose'' compressors that are designed to be operated without the need of a clean room.

Ingersoll Rand commented that water-cooled compressors would have higher installation costs than air-cooled equipment. (Ingersoll Rand, No. 044 Public Meeting Transcript at pp. 107–108) For the final rule, compressors using liquid- and air-cooled cooling systems are considered separate equipment classes, and are not considered potential replacements for one another in the LCC analysis. DOE recognizes that installations cost would be different for water- versus air-cooled compressors, but for equipment using the same cooling method, DOE does not expect installation costs to change with increased efficiency.

Atlas Copco responded that differences in installation costs would depend on what DOE considers as part of the equipment standard package. (Atlas Copco, No. 044 Public Meeting Transcript at p. 109) For the equipment defined as the standard package for the final rule, DOE does not expect installation cost to change as efficiency increases.[77]

In conclusion, DOE does not expect installation cost to change with increased efficiency, so DOE did not include installation costs for this final rule.

[77] The equipment defined as part of the standard package are discussed in section IV.C.2.

3. Annual Energy Consumption

For each sampled compressor, DOE determined the energy consumption for an air compressor at different efficiency levels using the approach described above in section IV.E of this document.

4. Energy Prices

DOE derived average and marginal annual non-residential (commercial and industrial) electricity prices at the National level using data from EIA's Form EIA–861 database (based on ''Annual Electric Power Industry Report''),[78] EEI Typical Bills and Average Rates Reports,[79] and information from utility tariffs. Electricity tariffs for non-residential end users can be very complex, with the principal difference from residential rates being the incorporation of demand charges. The presence of demand charges means that two end users with the same monthly electricity consumption may have very different bills, depending on their peak demand. For this final rule analysis, DOE used marginal electricity prices to estimate the impact of demand charges for end users of air compressors. The methodology used to calculate the marginal electricity rates is described in appendix 8B of the final rule TSD.

EEI noted that by using marginal electricity prices, which are sometimes higher than average electricity prices, DOE might be overstating the value of electricity savings for equipment operated outside of peak hours. (Edison Electric Institute, No. 0044 at pp. 99–100) DOE assumes that compressors operating at low load factors are operated during normal business hours. As a result, demand is coincident with peak hours, which has higher costs per-unit energy than non-peak hours. EEI did not offer any data to support its conjecture and, therefore, DOE maintained the electricity price methodology it used in the NOPR for this final rule.

To estimate energy prices in future years, DOE multiplied the average national energy prices by the projections of annual change in national-average commercial and industrial electricity prices in *AEO 2016,* which has an end year of 2040.[80] To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2020 to 2040.

[78] Available at: *www.eia.doe.gov/cneaf/electricity/page/eia861.html.*

[79] Edison Electric Institute. *Typical Bills and Average Rates Report.* Winter 2014 published April 2014, Summer 2014 published October 2014: Washington, DC (Last accessed June 2, 2015.) *www.eei.org/resourcesandmedia/products/Pages/Products.aspx.*

[80] U.S. Department of Energy, Energy Information Administration, *Annual Energy Outlook 2016 with Projections to 2040* (Available at: *www.eia.gov/forecasts/aeo/*). *AEO 2016AEO 2016.*

5. Maintenance and Repair Costs

Repair costs are associated with repairing or replacing product components that have failed in an appliance; maintenance costs are associated with maintaining the operation of the product. Typically, small incremental increases in product efficiency produce no, or only minor, changes in repair and maintenance costs compared to baseline efficiency products.

Compressed Air Systems stated that maintenance costs would be higher for more efficient equipment due to the need for more frequent service. (Compressed Air Systems, No. 0061 at p. 3) Compressed Air Systems did not provide any rationale for this increase in service. In the absence of information to indicate what would drive the need for additional service, or at which efficiency level DOE may need to consider an increase in repair or maintenance costs, or other drivers that would trigger higher repair or maintenance costs for more efficient equipment, DOE has maintained the same approach as the NOPR and not estimated repair or maintenance costs for this analysis.

6. Equipment Lifetime

DOE defines equipment lifetime as the age when a given air compressor is retired from service. For this analysis, DOE continued to use an estimated average lifetime of 13 years for the compressors examined in this rulemaking, with a minimum and maximum of 4 and 35 years, respectively

DOE estimated average lifetime by equipment class based existing literature and used these estimates to develop statistical distributions. DOE defines two types of lifetime: (1) Mechanical lifetime, that is the total lifetime hours of operation (including routine maintenance and repairs); and (2) service lifetime, that is the number of years the consumer owns and uses the unit, and is equal to the mechanical lifetime divided by the annual hours of operation. The service lifetime is the direct input to the LCC. DOE presented the minimum, average, and maximum equipment lifetimes estimates in the NOPR and at the NOPR public meeting. 81 FR 71723.

Sullivan-Palatek stated that they believed that DOE overstated the average life expectancy because DOE did not consider compressors removed from service when a plant closes or

when an upgrade to more capacity is needed. (Sullivan-Palatek, No. 0051 at p. 3) Compressed Air Systems stated that it agreed with the lifetime DOE presented in the NOPR. (Compressed Air Systems, No. 0061 at p. 3)

DOE reflects the uncertainty of equipment service lifetimes in the LCC analysis for equipment by using probability distributions described above. DOE maintains that the distribution of compressor lifetimes that it used captures situations such as those mentioned by Sullivan-Palatek. For this final rule, DOE maintained its approach from the NOPR and based equipment lifetimes on information published in the Lot 31 study.[81]

Sullivan-Palatek commented that equipment life is affected by the number of hours used, maintenance, installation and duty cycle. (Sullivan-Palatek, No. 0051 at p. 7) DOE used a distribution of lifetimes to capture the variability of lifetimes of compressors in the field. Because air compressors with more annual operating hours tend to have shorter lifetimes in years, DOE used a distribution of lifetime in hours to allow for a negative correlation between annual operating hours and lifetime in years. Due to the overall decreases in annual operating hours described in section IV.E.2, the estimated average air compressor lifetime increased slightly from the NOPR (an average of 12.5 years) to the final rule (an average of 13.3 years).

Compressed Air Systems speculated that air compressors meeting the DOE standards may have a lower life expectancy as performance degradation will be more difficult to prevent. (Compressed Air Systems, No. 0061 at p. 3) Compressed Air Systems did not provide any evidence that would provide a basis for using different lifetimes for higher-efficiency compressors. DOE maintained the approach in the NOPR of using the same lifetime distribution for all considered efficiency levels.

Chapter 8 of the final rule TSD contains a detailed discussion of equipment lifetimes.

7. Discount Rates

The discount rate is the rate at which future expenditures are discounted to estimate their present value. The weighted average cost of capital is commonly used to estimate the present value of cash flows to be derived from a typical company project or investment. Most companies use both debt and equity capital to fund investments, so the cost of capital is the weighted-average cost to the firm of equity and debt financing. DOE estimated the cost of equity using the capital asset pricing model, which assumes that the cost of equity for a particular company is proportional to the systematic risk faced by that company.

The primary source of data for this analysis was Damodaran Online, a widely used source of information about company debt and equity financing for most types of firms.[82] DOE estimated a separate distribution of weighted-average cost of capital for each business sector that purchases compressors. More details regarding DOE's estimates of end-user discount rates are provided in chapter 8 of the final rule TSD.

8. Energy Efficiency Distribution in the No-New-Standards Case

To accurately estimate the share of end users that would be affected by a potential energy conservation standard at a particular efficiency level, DOE's LCC analysis considered the projected distribution (*i.e.,* market shares) of equipment efficiencies that end users purchase in the no-new-standards case (*i.e.,* the case without new energy conservation standards). To estimate the efficiency distribution of air compressors for 2021, DOE examined the frequency of efficiencies made available under CAGI's voluntary testing program for each equipment class (CAGI database), and the distribution of efficiencies of shipments used in the pumps rulemaking,[83] scaled to the capacity range of compressors. DOE found the distribution for both samples to be similar, with the distribution of efficiencies of shipments for pumps skewed slightly toward higher efficiencies. DOE continued to use the re-scaled distribution of pump efficiencies, as it did in the NOPR, as it is based on the efficiencies of shipments of a durable industrial product, rather than the frequency of efficiency of an entry in a catalog, and thus better reflects end user choice.

The estimated market shares for the no-new-standards case efficiency distribution for air compressors are shown in Table IV.19. See chapter 8 of the final rule TSD for further information on the derivation of the efficiency distributions.

TABLE IV.19—DISTRIBUTION OF COMPRESSOR EFFICIENCIES IN THE NO-NEW-STANDARDS CASE

Efficiency level (EL)	Average of probability (%)	
	Air-cooled	Liquid-cooled
0	12%	12%
1	16	16
2	16	16
3	18	18
4	6	6
5	11	11
6	22	22

9. Payback Period Analysis

The payback period is the amount of time it takes the consumer to recover the additional installed cost of more-efficient products, compared to baseline products, through energy cost savings. Payback periods are expressed in years. Payback periods that exceed the life of the product mean that the increased total installed cost is not recovered in reduced operating expenses.

The inputs to the PBP calculation for each efficiency level are the change in total installed cost of the product and the change in the first-year annual operating expenditures relative to the baseline. The PBP calculation uses the same inputs as the LCC analysis, but does not include the discount rates.

As noted above, EPCA, as amended, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii) and 42 U.S.C. 6316(a)) For each considered efficiency level, DOE determined the value of the first year's energy savings by calculating the energy savings in accordance with the applicable DOE test procedure, and multiplying those savings by the average energy price projection for the year in which compliance with the standards would be required.

G. Shipments Analysis

DOE uses projections of annual equipment shipments to calculate the national impacts of potential energy

[81] *Ecodesign Preparatory Study on Electric Motor Systems/Compressors;* 2014; Prepared for the European Commission by Van Holsteijn en Kemna B.V. (VHK); ENER/C3/413–2010–LOT 31–SI2.612161; *www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0040-0031.*

[82] Damodaran Online, The Data Page: Cost of Capital by Industry Sector, 2001–2013. (Last accessed March, 2014.) See: *http://pages.stern.nyu.edu/~adamodar/.*

[83] U.S. Department of Energy. Energy Efficiency and Renewable Energy Office. Energy Conservation Program: Energy Conservation Standards for Pumps; Notice of proposed rulemaking. 2015. See: *www.regulations.gov/#!documentDetail;D=EERE-2011-BT-STD-0031-0040.*

conservation standards on energy use, NPV, and future manufacturer cash flows.[84] The shipments model takes an accounting approach, tracking market shares of each equipment class and the vintage of units in the stock. Stock accounting uses equipment shipments as inputs to estimate the age distribution of in-service equipment stocks for all years. The age distribution of in-service equipment stocks is a key input to calculations of both the NES and NPV, because operating costs for any year depend on the age distribution of the stock.

For the NOPR analysis, DOE received recent shipments data for rotary compressors from a number of stakeholders and subject matter experts. DOE received no adverse comments regarding the shipments projections presented in the NOPR of the equipment covered in this final rule, so DOE did not revise its overall approach to the shipments analysis for this final rule.

The 2013 shipments estimates were disaggregated by compressor capacity in cubic feet per minute (''cfm''). To project future shipments of air compressors, DOE scaled the 2013 values using macroeconmic forecasts for Value of Total Manufacturing Shipments, and Commercial Floor Space trend from *AEO 2016* for industrial and commercial sectors, respectively.

Air compressors are used widely in both commercial and manufacturing/industrial sectors. DOE was not able to locate any information indicating what fraction of equipment is used in either sector. For the NOPR, DOE assumed that industrial/manufacturing processes require a greater volume of compressed air than commercial processes. Due to higher electrical load requirements in the industrial/manufacturing sector than in the commercial sector, DOE assumed that compressors greater than 50 cfm capacity are mainly used in manufacturing, and that compressors equal to or less than 50 cfm capacity are mainly used in commercial buildings.

Sullivan-Palatek stated that DOE should not assume a hard break between commercial and industrial compressor at 50 cfm. Rather there is a gradual ''blend'' as capacity increases. (Sullivan-Palatek, No. 044 Public Meeting Transcript at pp. 111–112) DOE agreed with this assessment and revised its distribution between industrial and commercial sectors by applying a more gradual shift as capacity increases. The assumed distribution of compressors to the commercial sector by capacity covered in this final rule are shown in Table IV.20.

TABLE IV.20—DISTRIBUTION OF COMPRESSORS TO THE COMMERCIAL SECTOR BY CAPACITY

Full-load actual volume flow rate (cfm)	Share of shipment (percent)			
	RP_FS_L_AC	RP_FS_L_WC	RP_VS_L_AC	RP_VS_L_WC
≥35 to <50	63	63	63	63
≥50 to <100	31	31	31	31
≥100 to <200	6	6	6	6
≥200 to <300	0	0	0	0
≥500 to <1000	0	0	0	0
≥1,000 to <1250	0	0	0	0

For rotary equipment classes, DOE used CAGI test data for air compressors collected directly from manufacturers to distribute shipments into the different cooling type equipment classes. The equipment classes and their estimated market shares are shown in Table IV.21. DOE used the same shares for all years in the projection.

TABLE IV.21—SHARE OF SHIPMENTS BY EQUIPMENT CLASS

Equipment class	Description	Market Share (%)
RP_FS_L_AC	Rotary Screw, Fixed-Speed, Lubricated, Air Cooled	70
RP_FS_L_WC	Rotary Screw, Fixed-Speed, Lubricated, Liquid-Cooled	13
RP_VS_L_AC	Rotary Screw, Variable-Speed, Lubricated, Air Cooled	15
RP_VS_L_WC	Rotary Screw, Variable-Speed, Lubricated, Liquid-Cooled	3

DOE recognizes that an increase in equipment price resulting from energy conservation standards may affect end-user decisions making regarding whether to purchase a new compressor, a refurbished one, or repair an existing failed unit. DOE has not found any information in the literature that indicates a demand price elasticity for commercial and industrial firms. In the NOPR, DOE used a medium elasticity of −0.5 for commercial customers, and a lower elasticity (−0.25) for industrial customers.[85] DOE used a lower elasticity for industrial customers because these customers are likely to place greater value on the reliability and efficiency provided by new equipment over the alternative of purchasing used equipment. DOE received no comments on its assumed purchase price elasticities presented in the NOPR analysis, and maintained these assumptions for this final rule.

H. National Impact Analysis

The NIA assesses the national energy savings and the national net present value from a national perspective of total consumer costs and savings expected to result from new or amended standards at specific efficiency levels. (''Consumer'' in this context refers to consumers of the covered equipment.) DOE calculates the NES and NPV for the potential standard levels considered based on projections of annual

[84] DOE uses data on manufacturer shipments as a proxy for national sales, as aggregate data on sales is lacking. In general one would expect a close correspondence between shipments and sales.

[85] A price elasticity of −0.5 means that for every 1 percent increase in price, the demand for the product (*i.e.,* shipments) would decline by 0.5 percent. An elasticity of 1 indicates very high elasticity of demand, whereas an elasticity of zero indicates no elasticity of demand. Elasticities are considered constant over time.

equipment shipments, along with the annual energy consumption and total installed cost data from the energy use and LCC analyses.[86] For the present analysis, DOE projected the energy savings, operating cost savings, equipment costs, and NPV of consumer benefits over the lifetime of air compressors sold from 2022 through 2051.

DOE evaluates the impacts of potential standards for compressors by comparing a case without such standards with standards-case projections. For the no-new-standards case, DOE considers historical trends in efficiency and various forces that are likely to affect the mix of efficiencies over time. For the standards cases, DOE considers how a given standard would likely affect the market shares of equipment with efficiencies greater than the standard.

DOE uses a spreadsheet model to calculate the energy savings and the national consumer costs and savings from each TSL. Interested parties can review DOE's analyses by changing various input quantities within the spreadsheet. The NIA spreadsheet model uses typical values (as opposed to probability distributions) as inputs.

Table IV.22 summarizes the inputs and methods DOE used for the NIA analysis for this final rule. Discussion of these inputs and methods follows the table. See chapter 10 of the final rule TSD for further details.

TABLE IV.22—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS

Inputs	Method
Shipments	Annual shipments from shipments model.
Compliance Date of Standard	Late 2021 (assumed Jan. 1, 2022 for analysis).
Efficiency Trends	No-new-standards case: Constant market shares.
Annual Energy Consumption per Unit	Annual weighted-average values are a function of energy use at each TSL.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each TSL. Incorporates projection of future equipment prices based on historical data.
Annual Energy Cost per Unit	Annual weighted-average values as a function of the annual energy consumption per unit and energy prices.
Repair and Maintenance Cost per Unit	Annual values do not change with efficiency level.
Energy Prices	*AEO 2016* projections (to 2040) and extrapolation thereafter.
Energy Site-to-Primary and FFC Conversion	Site-to-Primary: A time-series conversion factor based on *AEO 2016. FFC:* Utilizes data and projections published in *AEO 2016.*
Discount Rate	Three and seven percent.
Present Year	2016.

1. Equipment Efficiency Trends

A key component of the NIA is the trend in energy efficiency projected for the no-new-standards case and for each of the standards cases. Section IV.F.1 of this document describes how DOE developed an energy efficiency distribution for the no-new-standards case (which yields a shipment-weighted average efficiency) for each of the considered equipment classes for the first full year of anticipated compliance with a new standard.

For the NOPR, DOE examined data on the number of air compressor designs by efficiency for 2006 through 2015 from manufacturer performance test reports. However, DOE could determine no clear trend from the examination of the data, and DOE had no data indicating what percentage of shipments are attributed to these more-efficient air compressors. Therefore, DOE did not apply a trend over time to air compressor efficiency.

CAGI commented that it was not plausible to assume that that there is no change, over time, in the market share of more efficient equipment, and that it would be difficult to arrive at an exact figure. (CAGI, No. 0052 at p. 11)

For the reasons described above, DOE maintained the approach from the NOPR for his final rule and did not apply a trend over time to air compressor efficiency in the no-new-standards case. However, DOE examined two scenarios where the efficiency of the market shifts to higher efficiency equipment over time. In the first scenario, the market shifts to higher efficiency levels at a rate of 0.5 percent each year; in the second scenario, the rate is 1 percent per year. The results of these scenarios can be found in appendix 10D of the final rule TSD.

For each standards case, DOE used a ''roll-up'' scenario to establish the market shares by efficiency level for the year that compliance would be required with new standards (*i.e.,* late 2021). While DOE could not determine a clear trend in efficiency improvement over time, nor could DOE identify any clear drivers for energy efficiency. DOE does acknowledge that the range of compressor efficiencies in the market varies widely, with the majority of equipment sold above baseline efficiency in the no-new-standards case. This distribution of efficiencies is in Table IV.19 where the no-new-standards case DOE estimated that 88 percent of equipment sold is above baseline efficiency. Therefore, after the compliance year, DOE maintained consistency with the no-new-standards case and assumed no change in efficiency.

2. National Energy Savings

The national energy savings analysis involves a comparison of national energy consumption of the considered products between each potential standards case (TSL) and the case with no new energy conservation standards. DOE calculated the national energy consumption by multiplying the number of units (stock) of each product (by vintage or age) by the unit energy consumption (also by vintage). DOE calculated annual NES based on the difference in national energy consumption for the no-new-standards case and for each higher efficiency standard case. DOE estimated energy consumption and savings based on site energy and converted the electricity consumption and savings to primary energy (*i.e.,* the energy consumed by power plants to generate site electricity) using annual conversion factors derived from *AEO 2016.* Cumulative energy savings are the sum of the NES for each year over the timeframe of the analysis.

The site-to-primary energy conversion factors are estimated by sector and end-

[86] For the NIA, DOE adjusts the installed cost data from the LCC analysis to exclude sales tax, which is a transfer.

use. As there is no specific end-use for compressors for either the commercial or industrial sectors, in the NOPR DOE used conversion factors for refrigeration as a proxy because refrigeration has the potential to operate constantly as some compressors do in the field.

Edison Electric Institute commented that using the site-to-source conversion factors for refrigerators as a proxy was incorrect, as most compressors do not operate like refrigerators. (EEI, Public Meeting Transcript, No. 0044 at p. 144) In response to this comment, for the final rule, DOE instead used an average of site-to-source conversion for all industrial and commercial end-uses.

In 2011, in response to the recommendations of a committee on Point-of-Use and Full-Fuel-Cycle Measurement Approaches to Energy Efficiency Standards appointed by the National Academy of Sciences, DOE announced its intention to use full-fuel-cycle (''FFC'') measures of energy use and greenhouse gas and other emissions in the national impact analyses and emissions analyses included in future energy conservation standards rulemakings. 76 FR 51281 (Aug. 18, 2011). After evaluating the approaches discussed in the August 18, 2011 notice, DOE published a statement of amended policy in which DOE explained its determination that EIA's National Energy Modeling System (''NEMS'') is the most appropriate tool for its FFC analysis and its intention to use NEMS for that purpose. 77 FR 49701 (Aug. 17, 2012). NEMS is a public domain, multi-sector, partial equilibrium model of the U.S. energy sector [87] that EIA uses to prepare its *Annual Energy Outlook.* The FFC factors incorporate losses in production and delivery in the case of natural gas (including fugitive emissions) and additional energy used to produce and deliver the various fuels used by power plants. The approach used, for deriving FFC measures of energy use and emissions, is described in appendix 10A of the final rule TSD.

3. Net Present Value Analysis

The inputs for determining the NPV of the total costs and benefits experienced by consumers are (1) total annual installed cost, (2) total annual operating costs (energy costs and repair and maintenance costs), and (3) a discount factor to calculate the present value of costs and savings. DOE calculates net savings each year as the difference between the no-new-standards case and each standards case in terms of total savings in operating costs versus total increases in installed costs. DOE calculates operating cost savings over the lifetime of each product shipped during the projection period.

As discussed in section IV.F.1 of this document, DOE does not find a firm basis to project a trend in air compressor prices, so DOE used constant real prices as the default. To evaluate the effect of uncertainty regarding the price trend estimates, DOE investigated the impact of different product price projections on the consumer NPV for the considered TSLs for air compressors. In addition to the default price trend, DOE considered two equipment price sensitivity cases: (1) A high price decline case based on Air and Gas Compressor Manufacturer historical Producer Price Index (''PPI'') series [88] and (2) a low price decline case based on *AEO 2016* industrial equipment price trend. The derivation of these price trends and the results of these sensitivity cases are described in appendix 10C of the final rule TSD.

The operating cost savings are energy cost savings, which are calculated using the estimated energy savings in each year and the projected price of the appropriate form of energy. To estimate energy prices in future years, DOE multiplied the average regional energy prices by a projection of annual national-average commercial and industrial energy price changes consistent with the cases described on page E–8 in AEO 2016,[89] which has an end year of 2040. To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2020 through 2040. As part of the NIA, DOE also analyzed scenarios that used inputs from variants of the *AEO 2016* case that have lower and higher economic growth. Those cases have lower and higher energy price trends and the NIA results based on these cases are presented in appendix 10C of the final rule TSD.

In calculating the NPV, DOE multiplies the net savings in future years by a discount factor to determine their present value. For this final rule, DOE estimated the NPV of consumer benefits using both a 3-percent and a 7-percent real discount rate. DOE uses these discount rates in accordance with guidance provided by the Office of Management and Budget (''OMB'') to Federal agencies on the development of regulatory analysis.[90] The discount rates for the determination of NPV are in contrast to the discount rates used in the LCC analysis, which are designed to reflect a consumer's perspective. The 7-percent real value is an estimate of the average before-tax rate of return to private capital in the U.S. economy. The 3-percent real value represents the ''social rate of time preference,'' which is the rate at which society discounts future consumption flows to their present value.

I. Consumer Subgroup Analysis

In analyzing the potential impact of new or amended energy conservation standards on consumers, DOE evaluates the impact of the new or amended standard on identifiable subgroups of consumers that may be disproportionately affected. The purpose of a subgroup analysis is to determine the extent of any such disproportional impacts. DOE evaluates impacts on particular subgroups of consumers by analyzing the LCC impacts and PBP for those particular consumers from alternative standard levels. For this final rule, DOE analyzed the impacts of the considered standard levels on small business consumers. DOE used the LCC and PBP spreadsheet model to estimate the impacts of the considered efficiency levels on this subgroup. Chapter 11 in the final rule TSD describes the consumer subgroup analysis.

J. Manufacturer Impact Analysis

1. Overview

DOE performed an MIA to estimate the financial impacts of new energy conservation standards on manufacturers of compressors and to estimate the potential impacts of such standards on employment and manufacturing capacity. The MIA has both quantitative and qualitative aspects and includes analyses of projected industry cash flows, the INPV, investments in research and development (''R&D'') and manufacturing capital, and domestic manufacturing employment. Additionally, the MIA seeks to

[87] For more information on NEMS, refer to *The National Energy Modeling System: An Overview 2009,* DOE/EIA–0581(2009), October 2009. Available at *www.eia.gov/forecasts/aeo/index.cfm.*

[88] U.S. Department of Labor, Bureau of Labor Statistics, Air & gas compressors, ex. compressors for ice making, refrigeration, or a/c equipment, Series ID: PCU33391233391211Z.

[89] U.S. Department of Energy—Energy Information Administration. Annual Energy Outlook 2016 with Projections to 2040. Washington, DC. Available at *www.eia.gov/forecasts/aeo/.*

The standards finalized in this rulemaking will take effect before the requirements of the Clean Power Plan (CPP) as modeled in the AEO 2016 Reference case, putting downward pressure on electricity prices relative to that case. Consequently, DOE used the more conservative price projections found in the AEO 2016 No-CPP case.

[90] United States Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. Section E. Available at *www.whitehouse.gov/omb/memoranda/m03-21.html.*

determine how new energy conservation standards might affect manufacturing employment, capacity, and competition, as well as how standards contribute to overall regulatory burden. Finally, the MIA serves to identify any disproportionate impacts on manufacturer subgroups, including small business manufacturers.

The quantitative part of the MIA primarily relies on the GRIM, an industry cash-flow model with inputs specific to this rulemaking. The key GRIM inputs include data on the industry cost structure, unit production costs, unit shipments, manufacturer markups, and investments in research and development (R&D) and manufacturing capital required to produce compliant products. The key GRIM outputs are the INPV, which is the sum of industry annual cash flows over the analysis period, discounted using the industry-weighted average cost of capital, and the impact to domestic manufacturing employment. The model uses standard accounting principles to estimate the impacts of more-stringent energy conservation standards on a given industry by comparing changes in INPV and domestic manufacturing employment between a no-new-standards case and the various standards cases (TSLs). To capture the uncertainty relating to manufacturer pricing strategies following new standards, the GRIM estimates a range of possible impacts under different markup scenarios.

The qualitative part of the MIA addresses manufacturer characteristics and market trends. Specifically, the MIA considers such factors as a potential standard's impact on manufacturing capacity, competition within the industry, the cumulative impact of other DOE and non-DOE regulations, and impacts on manufacturer subgroups. The complete MIA is outlined in chapter 12 of the final rule TSD.

DOE conducted the MIA for this rulemaking in three phases. In Phase 1 of the MIA, DOE prepared a profile of the compressor manufacturing industry based on the market and technology assessment, preliminary manufacturer interviews, and publicly available information. This included a top-down analysis of compressor manufacturers that DOE used to derive preliminary financial inputs for the GRIM (*e.g.,* revenues; materials, labor, overhead, and depreciation expenses; selling, general, and administrative expenses (''SG&A''); and R&D expenses). DOE also used public sources of information to further calibrate its initial characterization of the compressor manufacturing industry, including company filings of form 10–K from the SEC,[91] corporate annual reports, the U.S. Census Bureau's ''Economic Census'' [92] and Hoover's reports to conduct this analysis.[93]

In Phase 2 of the MIA, DOE prepared a framework industry cash-flow analysis to quantify the potential impacts of new energy conservation standards on compressors. The GRIM uses several factors to determine a series of annual cash flows starting with the announcement of the standard and extending over a 30-year period following the compliance date of the standard. These factors include annual expected revenues, costs of sales, SG&A and R&D expenses, taxes, and capital expenditures. In general, energy conservation standards can affect manufacturer cash flow in three distinct ways: (1) Creating a need for increased investment, (2) raising production costs per unit, and (3) altering revenue due to higher per-unit prices and changes in sales volumes.

In addition, during Phase 2, DOE developed interview guides to distribute to manufacturers of compressors in order to develop other key GRIM inputs, including product and capital conversion costs, and to gather additional information on the anticipated effects of energy conservation standards on revenues, direct employment, capital assets, industry competitiveness, and subgroup impacts.

In Phase 3 of the MIA, DOE evaluated subgroups of manufacturers that may be disproportionately impacted by energy conservation standards or that may not be represented accurately by the average cost assumptions used to develop the industry cash-flow analysis. For example, small manufacturers, niche players, or manufacturers exhibiting a cost structure that greatly differs from the industry average could be more negatively affected. DOE identified one subgroup for a separate impact analysis: Small business manufacturers. The small business subgroup is discussed in section VII.B of this document, ''Review Under the Regulatory Flexibility Act'' and in chapter 12 of the final rule TSD.

[91] U.S. Securities and Exchange Commission, Annual 10–K Reports (Various Years) (Available at: *www.sec.gov/edgar/searchedgar/companysearch.html*).

[92] U.S. Census Bureau, Annual Survey of Manufacturers: General Statistics: Statistics for Industry Groups and Industries (2014) (Available at: *http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t*).

[93] Hoovers Inc. Company Profiles, Various Companies (Available at: *www.hoovers.com*).

2. Government Regulatory Impact Model and Key Inputs

DOE uses the GRIM to quantify the changes in cash flow due to new standards that result in a higher or lower industry value. The GRIM uses a standard, annual discounted cash-flow analysis that incorporates manufacturer costs, markups, shipments, and industry financial information as inputs. The GRIM models changes in costs, distribution of shipments, investments, and manufacturer margins that could result from a new energy conservation standard. The GRIM spreadsheet uses the inputs to arrive at a series of annual cash flows, beginning in 2016 (the reference year of the analysis) and continuing to 2051 (the end of the analysis period). DOE calculated INPVs by summing the stream of annual discounted cash flows during this period. For manufacturers of compressors, DOE used a real discount rate of 8.7-percent, which was derived from industry financials and then modified according to feedback received during manufacturer interviews.

The GRIM calculates cash flows using standard accounting principles and compares changes in INPV between the no-new-standards case and each standards case. The difference in INPV between the no-new-standards case and a standards case represents the financial impact of the new energy conservation standard on manufacturers. As discussed previously, DOE developed critical GRIM inputs using a number of sources, including publicly available data, results of the engineering analysis, and information gathered from industry stakeholders during the course of manufacturer interviews. The GRIM results are presented in section V.B.2 of this document. Additional details about the GRIM, the discount rate, and other financial parameters can be found in chapter 12 of the final rule TSD.

a. Manufacturer Production Costs

Manufacturing higher-efficiency equipment is typically more expensive than manufacturing baseline equipment due to the use of more complex components, which are typically costlier than baseline components. The changes in the manufacturer production cost (''MPC'') of the analyzed equipment can affect the revenues, gross margins, and cash flow of the industry, making the equipment cost data key GRIM inputs for DOE's analysis.

Costs associated with the MPC includes raw materials and purchased components, production labor, factory overhead, and production equipment depreciation. In the MIA, DOE used the

MPCs for each efficiency level calculated in the engineering analysis, as described in section IV.C.7 and further detailed in chapter 5 of the final rule TSD.

b. Shipments Projections

The GRIM estimates manufacturer revenues based on total unit shipment projects and the distribution of those shipments by efficiency level. Changes in sales volumes and efficiency mix over time can significantly affect manufacturer finances. For this analysis, the GRIM uses the NIA's annual shipment projections derived from the shipments analysis from 2016 to 2051. The shipments model divides the shipments of compressors into specific market segments. The model starts from a historical reference year and calculates retirements and shipments by market segment for each year of the analysis period. This approach produces an estimate of the total product stock, broken down by age or vintage, in each year of the analysis period. In addition, the product stock efficiency distribution is calculated for the no-new-standards case and for each standards case for each equipment class. The NIA shipments forecasts are, in part, based on a roll-up scenario. The forecast assumes that a product in the no-new-standards case that does not meet the standard under consideration would ''roll up'' to meet the new standard beginning in the compliance year of 2022. See section IV.G of this document and chapter 9 of the final rule TSD for additional details.

c. Product and Capital Conversion Costs

New energy conservation standards for compressors could cause manufacturers to incur conversion costs to bring their production facilities and equipment designs into compliance. DOE evaluated the level of conversion-related expenditures that would be needed to comply with each considered efficiency level in each product class. For the MIA, DOE classified these conversion costs into two major groups: (1) Product conversion costs; and (2) capital conversion costs. Product conversion costs are investments in research, development, testing, marketing, and other non-capitalized costs necessary to make product designs comply with new energy conservation standards. Capital conversion costs are investments in property, plant, and equipment necessary to adapt or change existing production facilities such that new compliant product designs can be fabricated and assembled. To evaluate the level of capital conversion costs manufacturers would likely incur to comply with new energy conservation standards, DOE used manufacturer interviews to gather data on the anticipated level of capital investment that would be required at each efficiency level. Based on equipment listings, provided by the engineering analysis, DOE developed industry average capital expenditure by weighting manufacturer feedback based on model offerings as a proxy for market-share. DOE supplemented manufacturer comments and tailored its analyses with information obtained during engineering analysis described in chapter 5 of the final rule TSD.

DOE assessed the product conversion costs at each considered efficiency level by integrating data from quantitative and qualitative sources. DOE received feedback regarding the potential costs of each efficiency level from multiple manufacturers to estimate product conversion costs (*e.g.,* R&D expenditures, certification costs). DOE combined this information with product listings to estimate how much manufacturers would have to spend on product development and product testing at each efficiency level. Manufacturer data were aggregated to better reflect the industry as a whole and to protect confidential information.

Ultimately, for the MIA, DOE modeled two standards-case conversion cost scenarios to represent uncertainty regarding the potential impacts on manufacturers following the implementation of energy conservation standards. These scenarios and figures used in the GRIM are further discussed in chapter 12 of the final rule TSD.

d. Markup Scenarios

As discussed previously, MSPs include direct manufacturing production costs (*i.e.,* labor, materials, and overhead estimated in DOE's MPCs) and all non-production costs (*i.e.,* SG&A, R&D, and interest), along with profit. To calculate the MSPs in the GRIM, DOE applied a baseline manufacturer markup to the MPCs estimated in the engineering analysis for each product class and efficiency level in both the no-new-standards case and the standards case.

With a baseline markup, DOE applied a uniform ''gross margin percentage'' for each equipment class, across all efficiency levels. This assumes that manufacturers would be able to maintain the same amount of profit as a percentage of revenues at all efficiency levels within an equipment class. As production costs increase with efficiency, the absolute dollar markup will increase as well. As discussed in section V.B.2.a, DOE estimated the average non-production cost baseline markup—which includes SG&A expenses, R&D expenses, interest, and profit—to be 1.35 for lubricated rotary compressors. For the purpose of this final rule analysis, the GRIM only analyzed lubricated, rotary compressors. All results in the MIA are presented for lubricated rotary compressors only. Additional details on markups can be found in chapter 12 of the final rule TSD.

3. Discussion of Comments

During the notice of proposed rulemaking public meeting, interested parties commented on the assumptions and results of the analyses. Verbal and written comments addressed several topics, including concerns regarding EU harmonization, testing impacts, impacts on packagers, and small business impacts.

a. EU Harmonization

Several stakeholders commented that DOE should consider the cumulative regulatory burden of simultaneous energy conservation standards that the industry is currently facing, particularly with the European Union's standards. In a joint comment, stakeholders stated that DOE should refine its analysis to include the cost effectiveness of full harmonization with the pending EU Compressor energy efficiency standards. Some manufacturers have already begun preparations for the proposed EU standard. Additionally, stakeholders commented that DOE should analyze the returns from the increased scale of production and a shared learning curve with international standards harmonization to consider the differential cost of development for products designed to comply. If U.S. and EU standards are not harmonized, these manufacturers noted they would either have to carry a greater number of equipment lines to comply with efficiency standards in both domestic and European markets, or sell a single set of high efficiency equipment in both markets. Either option will be cumbersome for manufacturers. (ASAP; ACEEE; NEEA; NRDC; NEEP; ASE, No. 60 at p. 3)

On the other hand, Sullivan-Palatek commented that some manufacturers only have U.S. operations and cannot take advantage of harmonizing with EU standards. Therefore, it would not be beneficial for all manufacturers to harmonize with EU standards. (Sullivan-Palatek, Public Meeting Transcript No. 44 at p. 127)

In response, DOE acknowledges that harmonization with EU standards would reduce cumulative regulatory

burden for some manufacturers. In the test procedure final rule, DOE excluded non-lubricated rotary compressors from the scope of test procedures in part to help manufacturers harmonize with the EU's standards. In this final rule, DOE modeled a low conversion cost scenario that accounts for potential synergies with the potential EU standard. In this scenario, industry has lower total conversion costs based synergies with the EU Standards, as proposed in EU's ''Lot 31'' analysis, which set air compressor standards for both reciprocating and rotary air compressors. As such, EU standards were considered as a factor in DOE's analysis. Further, to account for feedback that harmonization with EU standards would not be beneficial to industry, DOE modeled a high conversion cost scenario that reflects higher level of investments by manufacturers.

b. Testing Impacts

Sullivan-Palatek and Castair stated that a complex sampling and compliance program is a burden to such a low-volume specialty industry, particularly due to the staff, software and testing facilities required. These commenters were concerned that the test procedure, even with AEDMs, do not align with current testing methods used by the industry over the past 10 years. (Sullivan-Palatek, Public Meeting Transcript No. 0044 at p. 154–155; Castair, No. 45 at pp. 1–2) To address comments raised in both the test procedure rulemaking and the standards rulemaking, DOE amended the compressor test procedure to align as closely as possible to ISO 1217:2009 in order to reduce manufacturer burden. With these modifications, the test methods established in the final rule are intended to produce results equivalent to those produced historically under ISO 1217:2009. Consequently, if historical test data is consistent with values that will be generated when testing with the test methods established in this final rule, then manufacturers may use this data for the purposes of representing any metrics subject to representations requirements. (DOE, Public Meeting Transcript, No. 0016 at p. 136)

Jenny Products and Compressed Air Systems commented that the high cost to comply with the test procedure and standard would place a significant burden on small manufacturers. (Jenny Products, No. 58 at p. 5; Compressed Air Systems, No. 61 at p. 4) Additionally, Jenny and CAGI raised concerns that the testing process would require technical resources that would come at the expense of other priorities, such as customer service. (Jenny Products, No. 58 at p. 5; CAGI, No. 52 at p. 3)

Compressed Air Systems noted that testing four to five units based on the NOPR test procedure could cost up to $125,000 for a manufacturer. Most domestic small air compressor manufacturers produce small quantities of each model offered, which is a heavy cost burden to smaller companies with limited access to capital. (Compressed Air Systems, No. 61 at p. 4)

DOE understands the commenter's concerns about the scope of the test procedure as defined in the test procedure NOPR, which included many low-shipment volume or custom compressor models. In the test procedure final rule, DOE takes two key steps to address commenters' concerns and to reduce the burden of testing, especially for low-volume equipment. First, DOE significantly limits the scope of the test procedure final rule, as compared to the scope proposed in the test procedure NOPR. Second, DOE adopts provisions allowing the use of an alternative efficiency determination method (AEDM), in lieu of testing.

The revised scope aligns with the scope recommended by CAGI and other manufacturers. Further, the 10 to 200 hp scope established in the test procedure final rule falls within the scope of the CAGI Performance Verification Program for rotary compressors. A complete discussion can be found in the test procedure final rule.

In addition, the test procedure final rule adopts provisions allowing for the use of AEDMs. AEDMs are mathematical calculations or models that manufacturers may use to predict the energy efficiency or energy consumption characteristics of a basic model. The use of AEDMs are intended to reduce the need for physical testing and to reduce the overall testing burden for manufacturers.

c. Impacts on Packagers

During the NOPR public meeting, Sullivan-Palatek and Compressed Air Systems stated that packagers would incur engineering expenses as a result of the standard. They requested DOE incorporate cost estimates for packagers to comply with the standard in the revised analysis. (Compressed Air Systems; Sullivan-Palatek, Public Meeting Transcript No. 44 at p. 138–140) In written comments, Jenny Products stated that DOE should include in its cost estimate engineering redesign and certification costs for packagers. Jenny Products stated that the redesign of air ends by OEMs will only partially help packagers meet the standard. (Jenny Products, No. 58 at p. 4) In written comments, Sullivan-Palatek estimated packagers could have engineering redesign costs that exceed $1 million per company, depending on the number of models they offer. (Sullivan-Palatek, No. 51 at p. 1–2) Additionally, Castair requested that American air compressor packagers be exempt from this regulation (Castair, No. 18 at p. 2). (CAGI, No. 52 at p. 3) (Sullivan-Palatek, No. 51 at p. 2)

Sullivan-Palatek commented that contrary to DOE's assumption, this standard will result in significant production redesign costs for compressor packagers. They argue that the cost to packagers could in fact exceed $1 million per company because many of the energy gains required by this standard come not only from air end redesign, but also from packaging. (Sullivan-Palatek, No. 51 at p. 1–2) Additionally, Castair requested that American air compressor packagers be exempt from this regulation (Castair, No. 18 at p. 2). (CAGI, No. 52 at p. 3)

Although DOE is not exempting packagers from the analysis, DOE has revised its analysis to calculate and include costs associated with packagers in its final rule analysis. DOE estimates that packagers will incur between $10.5 and $15.2 million in total engineering redesign costs to comply with the energy conservation standards of this final rule. As such, DOE has included this cost to packagers in total conversion costs estimated at TSL 2, which are between $98.1 million and $121.3 million for the industry. Details of the conversion cost methodology are described in chapter 12 of the final rule TSD.

d. Small Business Impacts

Many manufacturers stated that small businesses will be negatively affected by the proposed regulation compared to their larger multinational counterparts. Sullivan-Palatek stated that it is difficult for small businesses to access capital compared to their larger competitors. (Sullivan-Palatek, Public Meeting Transcript No. 44 at p. 141–143) A few manufacturers also noted that a stringent standard can cause a disproportionate cost burden to small business. This burden will likely cause many small businesses to exit the rotary compressor business or to be acquired by larger companies. (Sullivan-Palatek, No. 51 at p. 2–9) (Castair, No. 52 at p. 3) (Compressed Air Systems, No. 61 at p. 4) Often times, these small businesses, both manufacturers and packagers, employ specialized workers that may not be able to find a new job where they can use their skills.

(Sullivan-Palatek, No. 51 at p. 9; Castair, No. 45 at p. 1; CAGI, No. 52 at p. 3)

Consistent with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*), as amended, the Department analyzed the expected impacts of an energy conservation standard on small business compressor manufacturers directly regulated by DOE's standards. DOE understands that small manufacturers may be significantly affected by an energy conservation standard. These impacts are discussed in detail in section VII.B of this document. Furthermore, DOE analyzes the impacts of a compressors energy conservation standard on domestic direct employment in section V.B.2.b of this final rule.

Additionally, Sullivan-Palatek questioned how a smaller firm, such as their own, with the same number of models requiring conversion as a large manufacturer, would have fewer conversion costs. The company requested an independent analysis by the Department of Justice. (Sullivan-Palatek, No. 51 at p. 8–9)

In the NOPR, DOE reported an average conversion cost for small manufacturers. Depending on the number of models offered and equipment efficiencies, small manufacturers may find that their conversion costs fall either above or below the small business average. In the NOPR and final rule analyses, DOE identified two small OEMs. For those two small OEMs, DOE identified 23 failing models or models that do not comply with the standard. DOE notes that 21 of the 23 failing models are manufactured by one small business OEM, which is Sullivan-Palatek. Sullivan-Palatek has a significant portion of failing models is above the industry average failure rate. A more detailed analysis of small business impacts can be found in section VI.B of this document.

During the notice of proposed rulemaking public meeting, DOE cautioned stakeholders that Small Business Administration (''SBA'') size standards may shift before the final rule is published. Sullair and CAGI commented that with an increased size standard, from 500 employees to 1,000 employees, the number of OEMs identified would increase as well. (CAGI, Public Meeting Transcript No. 44 at p. 141; Sullair, Public Meeting Transcript No. 44 at p. 140)

For the compressor manufacturing industry, the SBA sets size threshold, which defines those entities classified as small businesses for the purpose of this statue. Compressor manufacturers are classified under NAICS 333912, ''Air and Gas Compressor Manufacturing.'' During the NOPR stage, the SBA set a threshold of 500 employees or less for an entity to be considered as a small business in this industry. In February 2016, as codified in 13 CFR part 121, the SBA changed size standards for NAICS code 333912 to 1,000 employees or less. Therefore, for the purpose of this final rule, DOE has identified 22 small manufacturers that meet the employee threshold defined by the SBA. The manufacturer impact analysis and regulatory flexibility analysis have been updated in the final rule to reflect the changes in SBA size standards.

Manufacturers stated that there are between 10–100 more small businesses affected by this rulemaking that were not previously identified by DOE during the NOPR stage. With a number of small businesses unidentified, many were not notified or contacted for feedback prior to the regulation. Jenny Products noted DOE did not contact them during the NOPR stage. (Sullivan-Palatek, No. 51 at p. 1–2; Jenny Products, No. 58 at p. 4–5; Compressed Air Systems, No. 61 at p. 2; Castair, No. 45 at p. 2) In a written comment, Compressed Air Systems provided a list of sixteen potential small businesses that could be affected by this final rule. They also noted that while DOE's analysis shows that most units manufactured by small businesses can comply with the standards of this final rule, small businesses will still face high burdens testing each model. (Compressed Air Systems, No. 61 at p. 2–5) As such, Compressed Air Systems asked that DOE conduct a more thorough survey of domestic small businesses to understand how a stringent standard will lessen their ability to remain competitive in the market. (Compressed Air Systems, No. 61 at p. 2–5)

DOE recognizes that small manufacturers may be substantially impacted by energy conservation standards. Again, DOE notes in the Regulatory Flexibility Act, section VI.B of this final rule, that small manufacturers are not expected to face significantly higher conversion costs than their larger competitors. In response to the list of manufacturers provided by Compressed Air Systems, DOE reviewed this list and identified two additional entities that produce covered equipment. Of these two entities, one was a large manufacturer and the other was a domestic small business that packages and assembles covered equipment. DOE has updated its manufacturer count and analyses to reflect these additions. During the NOPR stage, DOE attempted to contact all small manufacturers identified at the time, including Jenny Products. Only two small manufacturers chose to participate in interviews with DOE.

K. Emissions Analysis

The emissions analysis consists of two components. The first component estimates the effect of potential energy conservation standards on power sector and site (where applicable) combustion emissions of CO_2, NO_X, SO_2, and Hg. The second component estimates the impacts of potential standards on emissions of two additional greenhouse gases, CH_4 and N_2O, as well as the reductions to emissions of all species due to ''upstream'' activities in the fuel production chain. These upstream activities comprise extraction, processing, and transporting fuels to the site of combustion. The associated emissions are referred to as upstream emissions.

The analysis of power sector emissions uses marginal emissions factors that were derived from data in *AEO 2016,* as described in section IV.M of this document. Details of the methodology are described in the appendices to chapters 13 and 15 of the final rule TSD.

Combustion emissions of CH_4 and N_2O are estimated using emissions intensity factors published by the EPA—GHG Emissions Factors Hub.[94] The FFC upstream emissions are estimated based on the methodology described in chapter 15 of the final rule TSD. The upstream emissions include both emissions from fuel combustion during extraction, processing, and transportation of fuel, and ''fugitive'' emissions (direct leakage to the atmosphere) of CH_4 and CO_2.

The emissions intensity factors are expressed in terms of physical units per MWh or MMBtu of site energy savings. Total emissions reductions are estimated using the energy savings calculated in the national impact analysis.

The AEO incorporates the projected impacts of existing air quality regulations on emissions. *AEO 2016* generally represents current legislation and environmental regulations, including recent government actions, for which implementing regulations were available as of February 29, 2016. DOE's estimation of impacts accounts for the presence of the emissions control programs discussed in the following paragraphs.

SO_2 emissions from affected electric generating units (''EGUs'') are subject to

[94] Available at *www2.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub.*

nationwide and regional emissions cap-and-trade programs. Title IV of the Clean Air Act sets an annual emissions cap on SO_2 for affected EGUs in the 48 contiguous States and the District of Columbia (DC). (42 U.S.C. 7651 *et seq.*) SO_2 emissions from 28 eastern States and DC were also limited under the Clean Air Interstate Rule (''CAIR''). 70 FR 25162 (May 12, 2005). CAIR created an allowance-based trading program that operates along with the Title IV program. In 2008, CAIR was remanded to EPA by the U.S. Court of Appeals for the District of Columbia Circuit, but it remained in effect.[95] In 2011, EPA issued a replacement for CAIR, the Cross-State Air Pollution Rule (''CSAPR''). 76 FR 48208 (Aug. 8, 2011). On August 21, 2012, the D.C. Circuit issued a decision to vacate CSAPR,[96] and the court ordered EPA to continue administering CAIR. On April 29, 2014, the U.S. Supreme Court reversed the judgment of the D.C. Circuit and remanded the case for further proceedings consistent with the Supreme Court's opinion.[97] On October 23, 2014, the D.C. Circuit lifted the stay of CSAPR.[98] Pursuant to this action, CSAPR went into effect (and CAIR ceased to be in effect) as of January 1, 2015.[99] *AEO 2016* incorporates implementation of CSAPR.

The attainment of emissions caps is typically flexible among EGUs and is enforced through the use of emissions allowances and tradable permits. Under existing EPA regulations, any excess SO_2 emission allowances resulting from the lower electricity demand caused by the adoption of an efficiency standard could be used to permit offsetting increases in SO_2 emissions by any regulated EGU. In past years, DOE recognized that there was uncertainty about the effects of efficiency standards on SO_2 emissions covered by the existing cap-and-trade system, but it concluded that negligible reductions in power sector SO_2 emissions would occur as a result of standards.

Beginning in 2016, however, SO_2 emissions will fall as a result of the Mercury and Air Toxics Standards (''MATS'') for power plants. 77 FR 9304 (Feb. 16, 2012). In the MATS final rule, EPA established a standard for hydrogen chloride as a surrogate for acid gas hazardous air pollutants (''HAP''), and also established a standard for SO_2 (a non-HAP acid gas) as an alternative equivalent surrogate standard for acid gas HAP. The same controls are used to reduce HAP and non-HAP acid gas; thus, SO_2 emissions will be reduced as a result of the control technologies installed on coal-fired power plants to comply with the MATS requirements for acid gas. *AEO 2016* assumes that, in order to continue operating, coal plants must have either flue gas desulfurization or dry sorbent injection systems installed by 2016. Both technologies, which are used to reduce acid gas emissions, also reduce SO_2 emissions. Under the MATS, emissions will be far below the cap established by CSPAR, so it is unlikely that excess SO_2 emissions allowances resulting from the lower electricity demand will be needed or used to permit offsetting increases in SO_2 emissions by any regulated EGU.[100] Because reduced electricity demand (and therefore reduced SO_2 emissions) will no longer be used to offset increases in SO_2 emissions elsewhere, DOE believes that energy conservation standards that decrease electricity generation will generally reduce SO_2 emissions in 2016 and beyond.

CSAPR established a cap on NO_X emissions in 28 eastern States and the District of Columbia. Energy conservation standards are expected to have little effect on NO_X emissions in those States covered by CSAPR because excess NO_X emissions allowances resulting from the lower electricity demand could be used to permit offsetting increases in NO_X emissions from other facilities. However, standards would be expected to reduce NO_X emissions in the States not affected by the caps, so DOE estimated NO_X emissions reductions from the standards considered in this final rule for these States.

The MATS limit mercury (Hg) emissions from power plants, but they do not include emissions caps and, as such, DOE's energy conservation standards would likely reduce Hg emissions. DOE estimated mercury emissions reduction using emissions factors based on *AEO 2016,* which incorporates the MATS.

L. Monetizing Carbon Dioxide and Other Emissions Impacts

As part of the development of this rule, DOE considered the estimated monetary benefits from the reduced emissions of CO_2, CH_4, N_2O and NO_X that are expected to result from each of the TSLs considered. In order to make this calculation analogous to the calculation of the NPV of consumer benefit, DOE considered the reduced emissions expected to result over the lifetime of products shipped in the projection period for each TSL. This section summarizes the basis for the values used for monetizing the emissions benefits and presents the values considered in this final rule.

1. Social Cost of Carbon

The Social Cost of Carbon (''SC-CO_2'') is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) climate-change-related changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services. Estimates of the SC-CO_2 are provided in dollars per metric ton of CO_2. A domestic SC-CO_2 value is meant to reflect the value of damages in the United States resulting from a unit change in CO_2 emissions, while a global SC-CO_2 value is meant to reflect the value of damages worldwide.

Under section 1(b)(6) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), agencies must, to the extent permitted by law, assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits

[95] See *North Carolina* v. *EPA,* 531 F.3d 896 (D.C. Cir. 2008), modified on rehearing, 550 F.3d 1176 (D.C. Cir. 2008).

[96] See *EME Homer City Generation, L.P.* v. *EPA,* 696 F.3d 7 (D.C. Cir. 2012).

[97] See *EPA* v. *EME Homer City Generation, L.P.* 134 S. Ct. 1584 (U.S. 2014). The Supreme Court held in part that EPA's methodology for quantifying emissions that must be eliminated in certain States due to their impacts in other downwind States was based on a permissible, workable, and equitable interpretation of the Clean Air Act provision that provides statutory authority for CSAPR.

[98] See *EME Homer City Generation, L.P.* v. *EPA,* Order (D.C. Cir. filed October 23, 2014) (No. 11–1302).

[99] On July 28, 2015, the D.C. Circuit issued its opinion regarding the remaining issues raised with respect to CSAPR that were remanded by the Supreme Court. The D.C. Circuit largely upheld CSAPR but remanded to EPA without *vacatur* certain States' emission budgets for reconsideration. *EME Homer City Generation, LP* v. *EPA,* 795 F.3d 118 (D.C. Cir. 2015).

[100] DOE notes that on June 29, 2015, the U.S. Supreme Court ruled that the EPA erred when the agency concluded that cost did not need to be considered in the finding that regulation of hazardous air pollutants from coal- and oil-fired electric utility steam generating units (''EGUs'') is appropriate and necessary under section 112 of the Clean Air Act (''CAA''). *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015). The Supreme Court did not vacate the MATS rule, and DOE has tentatively determined that the Court's decision on the MATS rule does not change the assumptions regarding the impact of energy conservation standards on SO_2 emissions. Further, the Court's decision does not change the impact of the energy conservation standards on mercury emissions. The EPA, in response to the U.S. Supreme Court's direction, has now considered cost in evaluating whether it is appropriate and necessary to regulate coal- and oil-fired EGUs under the CAA. EPA concluded in its final supplemental finding that a consideration of cost does not alter the EPA's previous determination that regulation of hazardous air pollutants, including mercury, from coal- and oil-fired EGUs, is appropriate and necessary. 79 FR 24420 (April 25, 2016). The MATS rule remains in effect, but litigation is pending in the D.C. Circuit Court of Appeals over EPA's final supplemental finding MATS rule.

are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. The purpose of the SC-CO_2 estimates presented here is to allow agencies to incorporate the monetized social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

As part of the interagency process that developed these SC-CO_2 estimates, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and to discuss key model inputs and assumptions. The main objective of this process was to develop a range of SC-CO_2 values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SC-CO_2 estimates used in the rulemaking process.

a. Monetizing Carbon Dioxide Emissions

When attempting to assess the incremental economic impacts of CO_2 emissions, the analyst faces a number of challenges. A report from the National Research Council [101] points out that any assessment will suffer from uncertainty, speculation, and lack of information about (1) future emissions of GHGs, (2) the effects of past and future emissions on the climate system, (3) the impact of changes in climate on the physical and biological environment, and (4) the translation of these environmental impacts into economic damages. As a result, any effort to quantify and monetize the harms associated with climate change will raise questions of science, economics, and ethics and should be viewed as provisional.

Despite the limits of both quantification and monetization, SC-CO_2 estimates can be useful in estimating the social benefits of reducing CO_2 emissions. Although any numerical estimate of the benefits of reducing carbon dioxide emissions is subject to some uncertainty, that does not relieve DOE of its obligation to attempt to factor those benefits into its cost-benefit analysis. Moreover, the Interagency Working Group (''IWG'') SC-CO_2 estimates are supported by the existing scientific and economic literature. As a result, DOE has relied on the IWG SC-CO_2 estimates in quantifying the social benefits of reducing CO_2 emissions. DOE estimates the benefits from reduced (or costs from increased) emissions in any future year by multiplying the change in emissions in that year by the SC-CO_2 values appropriate for that year. The NPV of the benefits can then be calculated by multiplying each of these future benefits by an appropriate discount factor and summing across all affected years.

It is important to emphasize that the current SC-CO_2 values reflect the IWG's best assessment, based on current data, of the societal effect of CO_2 emissions. The IWG is committed to updating these estimates as the science and economic understanding of climate change and its impacts on society improves over time. In the meantime, the interagency group will continue to explore the issues raised by this analysis and consider public comments as part of the ongoing interagency process.

In 2009, an interagency process was initiated to offer a preliminary assessment of how best to quantify the benefits from reducing carbon dioxide emissions. To ensure consistency in how benefits are evaluated across Federal agencies, the Administration sought to develop a transparent and defensible method, specifically designed for the rulemaking process, to quantify avoided climate change damages from reduced CO_2 emissions. The interagency group did not undertake any original analysis. Instead, it combined SC-CO_2 estimates from the existing literature to use as interim values until a more comprehensive analysis could be conducted. The outcome of the preliminary assessment by the interagency group was a set of five interim values that represented the first sustained interagency effort within the U.S. government to develop an SC-CO_2 estimate for use in regulatory analysis. The results of this preliminary effort were presented in several proposed and final rules issued by DOE and other agencies.

b. Current Approach and Key Assumptions

After the release of the interim values, the IWG reconvened on a regular basis to generate improved SC-CO_2 estimates. Specifically, the IWG considered public comments and further explored the technical literature in relevant fields. It relied on three integrated assessment models (''IAM'') commonly used to estimate the SC-CO_2: The FUND, DICE, and PAGE models. These models are frequently cited in the peer-reviewed literature and were used in the last assessment of the Intergovernmental Panel on Climate Change (''IPCC''). Each model was given equal weight in the SC-CO_2 values that were developed.

Each model takes a slightly different approach to model how changes in emissions result in changes in economic damages. A key objective of the interagency process was to enable a consistent exploration of the three models, while respecting the different approaches to quantifying damages taken by the key modelers in the field. An extensive review of the literature was conducted to select three sets of input parameters for these models: Climate sensitivity, socio-economic and emissions trajectories, and discount rates. A probability distribution for climate sensitivity was specified as an input into all three models. In addition, the IWG used a range of scenarios for the socio-economic parameters and a range of values for the discount rate. All other model features were left unchanged, relying on the model developers' best estimates and judgments.

In 2010, the IWG selected four sets of SC-CO_2 values for use in regulatory analyses. Three sets of values are based on the average SC-CO_2 from the three integrated assessment models, at discount rates of 2.5-, 3-, and 5-percent. The fourth set, which represents the 95th percentile SC-CO_2 estimate across all three models at a 3-percent discount rate, was included to represent higher-than-expected impacts from climate change further out in the tails of the SC-CO_2 distribution. The values grow in real terms over time. Additionally, the IWG determined that a range of values from 7-percent to 23-percent should be used to adjust the global SC-CO_2 to calculate domestic effects,[102] although preference is given to consideration of the global benefits of reducing CO_2

[101] National Research Council. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use.* 2009. National Academies Press: Washington, DC.

[102] It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no *a priori* reason why domestic benefits should be a constant fraction of net global damages over time.

[103] United States Government—Interagency Working Group on Social Cost of Carbon. *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* February 2010. *www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf.*

emissions. Table IV–23 presents the values in the 2010 IWG report.[103]

TABLE IV–23—ANNUAL SCC VALUES FROM 2010 IWG REPORT

[2007$ per metric ton CO_2]

Year	Discount rate and statistic			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

In 2013 the IWG released an update (which was revised in July 2015) that contained SC-CO_2 values that were generated using the most recent versions of the three integrated assessment models that have been published in the peer-reviewed literature.[104] DOE used these values for this final rule. Table IV–24 shows the four sets of SC-CO_2 estimates from the 2013 interagency update (revised July 2015) in 5-year increments from 2010 through 2050. The full set of annual SC-CO_2 estimates from 2010 through 2050 is reported in appendix 14A of the final rule TSD. The central value that emerges is the average SC-CO_2 across models at the 3-percent discount rate. However, for purposes of capturing the uncertainties involved in regulatory impact analysis, the IWG emphasizes the importance of including all four sets of SC-CO_2 values.

TABLE IV–24—ANNUAL SC-CO^2 VALUES FROM 2013 IWG UPDATE (REVISED JULY 2015)

[2007$ per metric ton CO_2]

Year	Discount rate and statistic			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
2010	10	31	50	86
2015	11	36	56	105
2020	12	42	62	123
2025	14	46	68	138
2030	16	50	73	152
2035	18	55	78	168
2040	21	60	84	183
2045	23	64	89	197
2050	26	69	95	212

It is important to recognize that a number of key uncertainties remain, and that current SC-CO_2 estimates should be treated as provisional and revisable because they will evolve with improved scientific and economic understanding. The interagency group also recognizes that the existing models are imperfect and incomplete. The National Research Council report mentioned previously points out that there is tension between the goal of producing quantified estimates of the economic damages from an incremental ton of carbon and the limits of existing efforts to model these effects. There are a number of analytical challenges that are being addressed by the research community, including research programs housed in many of the Federal agencies participating in the interagency process to estimate the SC-CO_2. The interagency group intends to periodically review and reconsider those estimates to reflect increasing knowledge of the science and economics of climate impacts, as well as improvements in modeling.

DOE converted the values from the 2013 interagency report (revised July 2015) to 2015$ using the implicit price deflator for gross domestic product (''GDP'') from the Bureau of Economic Analysis. For each of the four sets of SC-CO_2 cases, the values for emissions in 2020 are $13.5, $47.4, $69.9, and $139 per metric ton avoided (values expressed in 2015$). DOE derived values after 2050 based on the trend in 2010–2050 in each of the four cases in the interagency update.

[102] It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no *a priori* reason why domestic benefits should be a constant fraction of net global damages over time.

[103] United States Government—Interagency Working Group on Social Cost of Carbon. *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* February 2010. *www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf.*

DOE multiplied the CO_2 emissions reduction estimated for each year by the SC-CO_2 value for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SC-CO_2 values in each case.

DOE received several comments on the development of and the use of the SCC values in its analyses. A group of trade associations led by the U.S. Chamber of Commerce objected to DOE's continued use of the SCC in the cost-benefit analysis and stated that the SCC calculation should not be used in any rulemaking until it undergoes a more rigorous notice, review, and comment process. (U.S. Chamber of Commerce, No. 0050 at p. 4) The Cato Institute stated that the current SCC estimates are discordant with the best scientific literature on the equilibrium climate sensitivity and the fertilization effect of carbon dioxide, and are based upon the output of integrated assessment models that have little utility because of their great uncertainties. The Cato Institute stated that until the SCC values are corrected, the SCC should be barred from use in this and all other Federal rulemakings. (Cato Institute, No. 0043 at pp. 1–2) IECA stated that before DOE applies any SCC estimate in its rulemaking, DOE must correct the methodological flaws that commenters have raised about the IWG's SCC estimate. IECA referenced a U.S. Government Accountability Office report that highlights severe uncertainties in SCC values. (IECA, No. 0048 at p. 2)

In contrast, the Joint Advocates stated that only a partial accounting of the costs of climate change (those most easily monetized) can be provided, which inevitably involves incorporating elements of uncertainty. The Joint Advocates commented that accounting for the economic harms caused by climate change is a critical component of sound benefit-cost analyses of regulations that directly or indirectly limit greenhouse gases. The Joint Advocates stated that several Executive Orders direct Federal agencies to consider non-economic costs and benefits, such as environmental and public health impacts. (Joint Advocates, No. 0047 at pp. 2–3) Furthermore, the Joint Advocates argued that without an SCC estimate, regulators would by default be using a value of zero for the benefits of reducing carbon pollution, thereby implying that carbon pollution has no costs. The Joint Advocates stated that it would be arbitrary for a Federal agency to weigh the societal benefits and costs of a rule with significant carbon pollution effects but to assign no value at all to the considerable benefits of reducing carbon pollution. (Joint Advocates, No. 0047 at p. 3)

The Joint Advocates stated that assessment and use of the integrated assessment models (IAM) in developing the SCC values has been transparent. The Joint Advocates further noted that repeated opportunities for public comment demonstrate that the IWG's SCC estimates were developed and are being used transparently. (Joint Advocates, No. 0047 at p. 4) The Joint Advocates stated that (1) the IAMs used reflect the best available, peer-reviewed science to quantify the benefits of carbon emission reductions; (2) uncertainty is not a valid reason for rejecting the SCC analysis, and (3) the IWG was rigorous in addressing uncertainty inherent in estimating the economic cost of pollution. (Joint Advocates, No. 0047 at pp. 5, 17–18, 18–19) The Joint Advocates added that the increase in the SCC estimate in the 2013 update reflects the growing scientific and economic research on the risks and costs of climate change, but is still very likely an underestimate of the SCC. (Joint Advocates, No. 0047 at p. 4)

In response to the comments on the SCC, in conducting the interagency process that developed the SCC values, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. Key uncertainties and model differences transparently and consistently inform the range of SCC estimates. These uncertainties and model differences are discussed in the IWG's reports, as are the major assumptions. Specifically, uncertainties in the assumptions regarding climate sensitivity, as well as other model inputs such as economic growth and emissions trajectories, are discussed and the reasons for the specific input assumptions chosen are explained. However, the three integrated assessment models used to estimate the SCC are frequently cited in the peer-reviewed literature and were used in the last assessment of the IPCC. In addition, new versions of the models that were used in 2013 to estimate revised SCC values were published in the peer-reviewed literature. The GAO report mentioned by IECA noted that the working group's processes and methods used consensus-based decision making, relied on existing academic literature and models, and took steps to disclose limitations and incorporate new information.[105] Although uncertainties remain, the revised SCC values are based on the best available scientific information on the impacts of climate change. The current estimates of the SCC have been developed over many years, using the best science available, and with input from the public.[106] DOE notes that not using SCC estimates because of uncertainty would be tantamount to assuming that the benefits of reduced carbon emissions are zero, which is inappropriate. Furthermore, the commenters have not offered alternative estimates of the SCC that they believe are more accurate.

IECA stated that the social cost of carbon places U.S. manufacturing at a distinct competitive disadvantage. IECA added that the higher SCC cost drives manufacturing companies offshore and increases imports of more carbon-intensive manufactured goods. (IECA, No. 0048 at pp. 1–2) The SCC is not a cost imposed on any manufacturers. It is simply a metric that Federal agencies use to estimate the societal benefits of policy actions that reduce CO_2 emissions.

IECA stated that the SCC estimates must be made consistent with OMB Circular A–4, and noted that it uses a lower discount rate than recommended by OMB Circular A–4 and values global benefits rather than solely U.S. domestic benefits. (IECA, No. 0048 at p. 5) The Cato Institute also stated that the SCC approach is at odds with existing OMB guidelines for preparing regulatory analyses. (Cato Institute, No. 0043 at p. 1)

OMB Circular A–4 provides two suggested discount rates for use in regulatory analysis: 3-percent and 7-percent. Circular A–4 states that the 3 percent discount rate is appropriate for ''regulation [that] primarily and directly affects private consumption (*e.g.,* through higher consumer prices for goods and services).'' The interagency working group that developed the SCC values for use by Federal agencies examined the economics literature and concluded that the consumption rate of interest is the correct concept to use in evaluating the net social costs of a

[105] *www.gao.gov/products/GAO-14-663.* (Last accessed Sept. 22, 2016)

[106] In November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SCC estimates. In July 2015, OMB published a detailed summary and formal response to the many comments that were received. See *www.whitehouse.gov/blog/2015/07/02/estimating-benefits-carbon-dioxide-emissions-reductions.* OMB also stated its intention to seek independent expert advice on opportunities to improve the estimates, including many of the approaches suggested by commenters.

marginal change in CO_2 emissions, as the impacts of climate change are measured in consumption-equivalent units in the three models used to estimate the SCC. The interagency working group chose to use three discount rates to span a plausible range of constant discount rates: 2.5-, 3-, and 5-percent per year. The central value, 3-percent, is consistent with estimates provided in the economics literature and OMB's Circular A–4 guidance for the consumption rate of interest.

Regarding the use of global SCC values, DOE's analysis estimates both global and domestic benefits of CO_2 emissions reductions. Following the recommendation of the IWG, DOE places more focus on a global measure of SCC. The climate change problem is highly unusual in at least two respects. First, it involves a global externality: Emissions of most greenhouse gases contribute to damages around the world even when they are emitted in the United States. Consequently, to address the global nature of the problem, the SCC must incorporate the full (global) damages caused by GHG emissions. Second, climate change presents a problem that the United States alone cannot solve. Even if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change. Other countries would also need to take action to reduce emissions if significant changes in the global climate are to be avoided. Emphasizing the need for a global solution to a global problem, the United States has been actively involved in seeking international agreements to reduce emissions and in encouraging other nations, including emerging major economies, to take significant steps to reduce emissions. When these considerations are taken as a whole, the interagency group concluded that a global measure of the benefits from reducing U.S. emissions is preferable. DOE's approach is not in contradiction of the requirement to weigh the need for national energy conservation, as one of the main reasons for national energy conservation is to contribute to efforts to mitigate the effects of global climate change.

IECA stated that the social cost of carbon value is unrealistically high in comparison to carbon market prices. (IECA, No. 0048 at p. 3) The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year, whereas carbon trading prices in existing markets are simply a function of the demand and supply of tradable permits in those markets. Such prices depend on the arrangements in specific carbon markets, and bear no necessary relation to the damages associated with an incremental increase in carbon emissions.

2. Social Cost of Methane and Nitrous Oxide

The Joint Advocates stated that EPA and other agencies have begun using a methodology developed to specifically measure the social cost of methane in recent proposed rulemakings, and recommended that DOE should use the social cost of methane metric to more accurately reflect the true benefits of energy conservation standards. They stated that the methodology in the study used to develop the social cost of methane provides reasonable estimates that reflect updated evidence and provide consistency with the Government's accepted methodology for estimating the SCC. (Joint Advocates, No. 0047 at pp. 19–20)

While carbon dioxide is the most prevalent greenhouse gas emitted into the atmosphere, other GHGs are also important contributors. These include methane and nitrous oxide. Global warming potential values (''GWPs'') are often used to convert emissions of non-CO_2 GHGs to CO_2-equivalents to facilitate comparison of policies and inventories involving different GHGs. While GWPs allow for some useful comparisons across gases on a physical basis, using the social cost of carbon to value the damages associated with changes in CO_2-equivalent emissions is not optimal. This is because non-CO_2 GHGs differ not just in their potential to absorb infrared radiation over a given time frame, but also in the temporal pathway of their impact on radiative forcing, which is relevant for estimating their social cost but not reflected in the GWP. Physical impacts other than temperature change also vary across gases in ways that are not captured by GWP.

In light of these limitations and the paucity of peer-reviewed estimates of the social cost of non-CO_2 gases in the literature, the 2010 SCC Technical Support Document did not include an estimate of the social cost of non-CO_2 GHGs and did not endorse the use of GWP to approximate the value of non-CO_2 emission changes in regulatory analysis. Instead, the IWG noted that more work was needed to link non-CO_2 GHG emission changes to economic impacts.

Since that time, new estimates of the social cost of non-CO_2 GHG emissions have been developed in the scientific literature, and a recent study by Marten *et al.* (2015) provided the first set of published estimates for the social cost of CH_4 and N_2O emissions that are consistent with the methodology and modeling assumptions underlying the IWG SC-CO_2 estimates.[107] Specifically, Marten *et al.* used the same set of three integrated assessment models, five socioeconomic and emissions scenarios, equilibrium climate sensitivity distribution, three constant discount rates, and the aggregation approach used by the IWG to develop the SC-CO_2 estimates. An addendum to the IWG's Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866 summarizes the Marten *et al.* methodology and presents the SC-CH_4 and SC-N_2O estimates from that study as a way for agencies to incorporate the social benefits of reducing CH_4 and N_2O emissions into benefit-cost analyses of regulatory actions that have small, or ''marginal,'' impacts on cumulative global emissions.[108]

The methodology and estimates described in the addendum have undergone multiple stages of peer review and their use in regulatory analysis has been subject to public comment. The estimates are presented with an acknowledgement of the limitations and uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts, just as the IWG has committed to do for the SC-CO_2. The OMB has determined that the use of the Marten *et al.* estimates in regulatory analysis is consistent with the requirements of OMB's Information Quality Guidelines Bulletin for Peer Review and OMB Circular A–4.

The SC-CH_4 and SC-N_2O estimates are presented in Table IV–25. Following the same approach as with the SC-CO_2, values for 2010, 2020, 2030, 2040, and 2050 are calculated by combining all outputs from all scenarios and models for a given discount rate. Values for the years in between are calculated using linear interpolation. The full set of annual SC-CH_4 and SC-N_2O estimates between 2010 and 2050 is reported in

[107] Marten, A.L., Kopits, E.A., Griffiths, C.W., Newbold, S.C., and A. Wolverton. 2015. Incremental CH_4 and N_2O Mitigation Benefits Consistent with the U.S. Government's SC-CO_2 Estimates. *Climate Policy*. 15(2): 272–298 (published online, 2014).

[108] United States Government—Interagency Working Group on Social Cost of Greenhouse Gases. Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide. August 2016. *www.whitehouse.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf.*

appendix 14–A of the final rule TSD. DOE derived values after 2050 based on the trend in 2010–2050 in each of the four cases in the IWG addendum.

TABLE IV–25—ANNUAL SC-CH_4 AND SC-N_2O ESTIMATES FROM 2016 IWG ADDENDUM

[2007$ per metric ton]

Year	SC-CH_4				SC-N_2O			
	Discount rate and statistic				Discount rate and statistic			
	5%	3%	2.5%	3%	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile	Average	Average	Average	95th percentile
2010	370	870	1,200	2,400	3,400	12,000	18,000	31,000
2015	450	1,000	1,400	2,800	4,000	13,000	20,000	35,000
2020	540	1,200	1,600	3,200	4,700	15,000	22,000	39,000
2025	650	1,400	1,800	3,700	5,500	17,000	24,000	44,000
2030	760	1,600	2,000	4,200	6,300	19,000	27,000	49,000
2035	900	1,800	2,300	4,900	7,400	21,000	29,000	55,000
2040	1,000	2,000	2,600	5,500	8,400	23,000	32,000	60,000
2045	1,200	2,300	2,800	6,100	9,500	25,000	34,000	66,000
2050	1,300	2,500	3,100	6,700	11,000	27,000	37,000	72,000

DOE multiplied the CH_4 and N_2O emissions reduction estimated for each year by the SC-CH_4 and SC-N_2O estimates for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SC-CH_4 and SC-N_2O estimates in each case.

3. Social Cost of Other Air Pollutants

As noted previously, DOE estimated how the considered energy conservation standards would reduce power sector NO_X emissions in those 22 States not affected by CSAPR.

DOE estimated the monetized value of NO_X emissions reductions from electricity generation using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards.[109] The report includes high and low values for NO_X (as $PM_{2.5}$) for 2020, 2025, and 2030 using discount rates of 3-percent and 7-percent; these values are presented in appendix 14B of the final rule TSD. DOE primarily relied on the low estimates to be conservative.[110] The national average low values for 2020 (in 2015$) are $3,187/ton at 3-percent discount rate and $2,869/ton at 7-percent discount rate. DOE developed values specific to the sector for compressors using a method described in appendix 14B of the final rule TSD. For this analysis DOE used linear interpolation to define values for the years between 2020 and 2025 and between 2025 and 2030; for years beyond 2030 the value is held constant.

DOE multiplied the emissions reduction (in tons) in each year by the associated $/ton values, and then discounted each series using discount rates of 3 percent and 7 percent as appropriate.

DOE is evaluating appropriate monetization of reduction in other emissions in energy conservation standards rulemakings. DOE has not included monetization of those emissions in the current analysis.

M. Utility Impact Analysis

The utility impact analysis estimates several effects on the electric power generation industry that would result from the adoption of new or amended energy conservation standards. The utility impact analysis estimates the changes in installed electrical capacity and generation that would result for each TSL. The analysis is based on published output from the NEMS associated with *AEO 2016.* NEMS produces the *AEO* Reference case, as well as a number of side cases that estimate the economy-wide impacts of changes to energy supply and demand. For the current analysis, impacts are quantified by comparing the levels of electricity sector generation, installed capacity, fuel consumption and emissions consistent with the projections described on page E–8 of *AEO 2016* and various side cases. Details of the methodology are provided in the appendices to chapters 13 and 15 of the final rule TSD.

The output of this analysis is a set of time-dependent coefficients that capture the change in electricity generation, primary fuel consumption, installed capacity and power sector emissions due to a unit reduction in demand for a given end use. These coefficients are multiplied by the stream of electricity savings calculated in the NIA to provide estimates of selected utility impacts of new or amended energy conservation standards.

N. Employment Impact Analysis

DOE considers employment impacts in the domestic economy as one factor in selecting a standard. Employment impacts from new or amended energy conservation standards include both direct and indirect impacts. Direct employment impacts are any changes in the number of employees of manufacturers of the products subject to standards, their suppliers, and related service firms. The MIA addresses those impacts. Indirect employment impacts are changes in national employment that occur due to the shift in expenditures and capital investment

[109] Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See Tables 4A–3, 4A–4, and 4A–5 in the report. The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. *Chamber of Commerce, et al.* v. *EPA, et al.,* Order in Pending Case, 577 U.S. ___(2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan.

[110] For the monetized NO_X benefits associated with $PM_{2.5}$, the related benefits are primarily based on an estimate of premature mortality used by EPA. If the benefit-per-ton estimates were based on the high-end estimates, the values would be nearly two-and-a-half times larger. Using the lower value is more conservative when making the policy decision concerning whether a particular standard level is economically justified. If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2012), the values would be nearly two-and-a-half times larger. (See chapter 14 of the final rule TSD for citations for the studies mentioned above.)

caused by the purchase and operation of more-efficient appliances. Indirect employment impacts consist of the net jobs created or eliminated in the national economy, other than in the manufacturing sector being regulated, caused by (1) reduced spending by consumers on energy, (2) reduced spending on new energy supply by the utility industry, (3) increased consumer spending on the products to which the new standards apply and other goods and services, and (4) the effects of those three factors throughout the economy.

One method for assessing the possible effects on the demand for labor of such shifts in economic activity is to compare sector employment statistics developed by the Labor Department's Bureau of Labor Statistics (''BLS''). BLS regularly publishes its estimates of the number of jobs per million dollars of economic activity in different sectors of the economy, as well as the jobs created elsewhere in the economy by this same economic activity. Data from BLS indicates that capital expenditures in the utility sector generally create fewer jobs (both directly and indirectly) than expenditures in other sectors of the economy.[111] There are many reasons for these differences, including wage differences and the fact that the utility sector is more capital-intensive and less labor-intensive than other sectors. Energy conservation standards have the effect of reducing consumer utility bills. Because reduced consumer expenditures for energy likely lead to increased expenditures in other sectors of the economy, the general effect of efficiency standards is to shift economic activity from a less labor-intensive sector (*i.e.,* the utility sector) to more labor-intensive sectors (*e.g.,* the retail and service sectors). Thus, the BLS data suggests that net national employment may increase due to shifts in economic activity resulting from energy conservation standards.

DOE estimated indirect national employment impacts for the standard levels considered in this final rule using an input/output model of the U.S. economy called Impact of Sector Energy Technologies version 4 (''ImSET'').[112] ImSET is a special-purpose version of the U.S. Benchmark National Input-Output (''I–O'') model, which was designed to estimate the national employment and income effects of energy-saving technologies. The ImSET software includes a computer-based I–O model having structural coefficients that characterize economic flows among 187 sectors most relevant to industrial, commercial, and residential building energy use.

DOE notes that ImSET is not a general equilibrium forecasting model, and understands the uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Because ImSET does not incorporate price changes, the employment effects predicted by ImSET may over-estimate actual job impacts over the long run for this rule. Therefore, DOE used ImSET only to generate results for near-term timeframes (2027), where these uncertainties are reduced. For more details on the employment impact analysis, see chapter 16 of the final rule TSD.

V. Analytical Results and Conclusions

The following section addresses the results from DOE's analyses with respect to the considered energy conservation standards for compressors. It addresses the TSLs examined by DOE, the projected impacts of each of these levels if adopted as energy conservation standards for compressors, and the standards levels that DOE is adopting in this final rule. Additional details regarding DOE's analyses are contained in the final rule TSD supporting this document.

A. Trial Standard Levels

DOE analyzed the benefits and burdens of six TSLs for compressors. These TSLs were developed by combining specific efficiency levels for each of the equipment classes analyzed by DOE. DOE presents the results for the TSLs in this document, while the results for all efficiency levels that DOE analyzed are in the final rule TSD.

Table V.1 presents the TSLs and the corresponding efficiency levels for compressors. TSL 6 represents the maximum technologically feasible (''max-tech'') energy efficiency for all product classes. TSLs increase directly with the analyzed ELs, from EL 1 through max-tech (EL 6). TSL 3 is of significance because it represents a combination of efficiency levels that is equivalent to the draft EU second tier minimum energy efficiency requirement for rotary lubricated air compressors.[113]

TABLE V.1—TRIAL STANDARD LEVEL TO EFFICIENCY LEVEL MAPPING

Trial standard level	Efficiency level (EL)			
	RP_FS_L_AC	RP_FS_L_WC	RP_VS_L_AC	RP_VS_L_WC
TSL 1	EL 1	EL 1	EL 1	EL 1.
TSL 2	EL 2	EL 2	EL 2	EL 2.
TSL 3	EL 3	EL 3	EL 3	EL 3.
TSL 4	EL 4	EL 4	EL 4	EL 4.
TSL 5	EL 5	EL 5	EL 5	EL 5.
TLS 6	EL 6	EL 6	EL 6	EL 6.

B. Economic Justification and Energy Savings

1. Economic Impacts on Individual Consumers

DOE analyzed the economic impacts on compressors consumers by looking at the effects potential standards at each TSL would have on the LCC and PBP. DOE also examined the impacts of potential standards on selected consumer subgroups. These analyses are discussed below.

a. Life-Cycle Cost and Payback Period

In general, higher-efficiency products affect consumers in two ways: (1) Purchase price increases and (2) annual operating costs decrease. Inputs used for calculating the LCC and PBP include total installed costs (*i.e.,* product price

[111] See U.S. Department of Commerce—Bureau of Economic Analysis. *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II).* 1997. U.S. Government Printing Office: Washington, DC. Available at *www.bea.gov/scb/pdf/regional/perinc/meth/rims2.pdf.*

[112] Livingston, O.V., S.R. Bender, M.J. Scott, and R.W. Schultz (2015). ImSET 4.0: Impact of Sector Energy Technologies Model Description and User's Guide. Pacific Northwest National Laboratory. PNNL–24563.

[113] For more information regarding the draft regulation see: *www.eup-network.de/product-groups/overview-ecodesign/.*

plus installation costs), and operating costs (*i.e.,* annual energy use, energy prices, energy price trends, repair costs, and maintenance costs). The LCC calculation also uses product lifetime and a discount rate. Chapter 8 of the final rule TSD provides detailed information on the LCC and PBP analyses.

The following tables show the LCC and PBP results for the TSLs considered for compressors. In the first of each pair of tables, the simple payback is measured relative to the baseline product. In the second table, the impacts are measured relative to the efficiency distribution in the in the no-new-standards case in the compliance year. Because some consumers purchase products with higher efficiency in the no-new-standards case, the average savings are less than the difference between the average LCC of the baseline product and the average LCC at each TSL. The savings refer only to consumers who are affected by a standard at a given TSL. Those who already purchase a product with efficiency at or above a given TSL are not affected. Consumers for whom the LCC increases at a given TSL experience a net cost.

TABLE V.2—AVERAGE LCC AND PBP RESULTS FOR RP_FS_L_AC

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	Baseline	21,698	12,793	105,575	127,273		12.9
1	1	21,989	12,645	104,358	126,347	2.0	12.9
2	2	22,602	12,420	102,511	125,113	2.4	12.9
3	3	23,782	12,081	99,730	123,512	2.9	12.9
4	4	24,342	11,945	98,604	122,947	3.1	12.9
5	5	25,380	11,715	96,714	122,094	3.4	12.9
6	6	28,232	11,189	92,379	120,611	4.1	12.9

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.3—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR RP_FS_L_AC

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	7,882	0
2	2	8,002	1
3	3	7,377	3
4	4	7,192	4
5	5	7,849	7
6	6	8,604	14

* The savings represent the average LCC for affected consumers.

TABLE V.4—AVERAGE LCC AND PBP RESULTS FOR RP_FS_L_WC

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	Baseline	37,548	24,433	204,247	241,795		13.4
1	1	38,047	24,215	202,410	240,457	2.3	13.4
2	2	39,262	23,792	198,860	238,122	2.7	13.4
3	3	41,078	23,279	194,542	235,620	3.1	13.4
4	4	42,014	23,047	192,604	234,618	3.2	13.4
5	5	43,725	22,658	189,352	233,077	3.5	13.4
6	6	48,328	21,764	181,888	230,216	4.0	13.4

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.5—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR RP_FS_L_WC

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	11,644	0
2	2	10,559	1
3	3	14,398	2
4	4	11,615	5
5	5	12,907	7
6	6	14,684	12

* The savings represent the average LCC for affected consumers.

TABLE V.6—AVERAGE LCC AND PBP RESULTS FOR RP_VS_L_AC

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	Baseline	37,068	11,363	93,018	130,086		13.2
1	1	37,379	11,289	92,436	129,815	4.2	13.2
2	2	38,176	11,135	91,195	129,371	4.9	13.2
3	3	39,786	10,878	89,121	128,907	5.6	13.2
4	4	40,852	10,730	87,923	128,775	6.0	13.2
5	5	43,353	10,427	85,462	128,815	6.7	13.2
6	6	49,259	9,862	80,859	130,119	8.1	13.2

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.7—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR RP_VS_L_AC

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	2,343	2
2	2	2,618	6
3	3	2,248	17
4	4	2,130	23
5	5	1,885	31
6	6	−41	48

* The savings represent the average LCC for affected consumers.

TABLE V.8—AVERAGE LCC AND PBP RESULTS FOR RP_VS_L_WC

TSL	Efficiency level	Average costs (2015$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	Baseline	58,996	19,522	161,662	220,658		13.5
1	1	59,644	19,361	160,316	219,959	4.0	13.5
2	2	61,546	18,996	157,279	218,825	4.9	13.5
3	3	64,746	18,513	153,269	218,015	5.7	13.5
4	4	66,394	18,298	151,492	217,886	6.0	13.5
5	5	70,200	17,855	147,820	218,020	6.7	13.5
6	6	79,660	16,960	140,401	220,061	8.1	13.5

Note: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.9—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR RP_VS_L_WC

TSL	Efficiency level	Life-cycle cost savings	
		Average LCC savings * (2015$)	Percent of consumers that experience net cost
1	1	6,199	1
2	2	5,145	8
3	3	6,118	14
4	4	4,496	25
5	5	3,918	32
6	6	754	48

* The savings represent the average LCC for affected consumers.

b. Consumer Subgroup Analysis

In the consumer subgroup analysis, DOE estimated the impact of the considered TSLs on small businesses that purchase compressors. Table V.10 compares the average LCC savings and PBP at each efficiency level for the consumer subgroups, along with the average LCC savings for the entire consumer sample. In most cases, the average LCC savings and PBP small businesses that purchase compressors at the considered efficiency levels are not substantially different from the average for all consumers. Chapter 11 of the final rule TSD presents the complete LCC and PBP results for the subgroups.

TABLE V.10—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND ALL CONSUMERS

Equipment class	Consumer group	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5	TSL 6
Average Life-Cycle Cost Savings (2015$)							
RP_FS_L_AC	All Consumers	7,882	8,002	7,377	7,192	7,849	8,604
	Small Businesses	6,284	6,423	5,885	5,709	6,143	6,451
RP_FS_L_WC	All Consumers	11,644	10,559	14,398	11,615	12,907	14,684
	Small Businesses	9,904	8,593	11,413	9,130	9,999	10,972
RP_VS_L_AC	All Consumers	2,343	2,618	2,248	2,130	1,885	−41
	Small Businesses	1,860	1,910	1,424	1,200	602	−1,850
RP_VS_L_WC	All Consumers	6,199	5,145	6,118	4,496	3,918	754
	Small Businesses	4,422	3,468	3,539	2,312	1,206	−2,781
Simple Payback Period (years)							
RP_FS_L_AC	All Consumers	2.0	2.4	2.9	3.1	3.4	4.1
	Small Businesses	2.0	2.5	3.0	3.2	3.5	4.1
RP_FS_L_WC	All Consumers	2.3	2.7	3.1	3.2	3.5	4.0
	Small Businesses	2.3	2.7	3.1	3.3	3.6	4.1
RP_VS_L_AC	All Consumers	4.2	4.9	5.6	6.0	6.7	8.1
	Small Businesses	4.2	4.9	5.7	6.1	6.8	8.2
RP_VS_L_WC	All Consumers	4.1	4.9	5.8	6.1	6.8	8.2
	Small Businesses	4.1	4.9	5.8	6.1	6.8	8.2

c. Rebuttable Presumption Payback

As discussed in section III.H.2, 42 U.S.C. 6295(o)(2)(B)(iii) establishes a rebuttable presumption that an energy conservation standard is economically justified if the increased purchase cost for a product that meets the standard is less than three times the value of the first-year energy savings resulting from the standard. In calculating a rebuttable presumption payback period for each of the considered TSLs, DOE used discrete values, and, as required by EPCA, based the energy use calculation on the DOE test procedure for compressors. In contrast, the PBPs presented previously were calculated using distributions that reflect the range of energy use in the field.

Table V.11 presents the rebuttable-presumption payback periods for the considered TSLs for compressors. While DOE examined the rebuttable-presumption criterion, it considered whether the standard levels considered for this rule are economically justified through a more detailed analysis of the economic impacts of those levels, pursuant to 42 U.S.C. 6295(o)(2)(B)(i), that considers the full range of impacts to the consumer, manufacturer, Nation, and environment. The results of that analysis serve as the basis for DOE to evaluate definitively the economic justification for a potential standard level, thereby supporting or rebutting the results of any preliminary determination of economic justification.

TABLE V.11—REBUTTABLE-PRESUMPTION PAYBACK PERIODS

Equipment class	Trial standard level					
	1	2	3	4	5	6
RP_FS_L_AC	1.9	2.4	2.9	3.0	3.3	4.0
RP_FS_L_WC	2.2	2.6	3.0	3.2	3.4	4.0
RP_VS_L_AC	4.7	5.5	5.9	6.7	7.6	9.1
RP_VS_L_WC	4.6	5.4	5.5	6.8	7.6	9.1

2. Economic Impacts on Manufacturers

DOE performed an MIA to estimate the impact of new energy conservation standards on manufacturers of compressors. The next section describes the expected impacts on manufacturers at each considered TSL. Chapter 12 of the final rule TSD explains the analysis in further detail.

a. Industry Cash Flow Analysis Results

In this section, DOE provides GRIM results from the analysis, which examines changes in the industry that would result from a standard. Table V.12 and Table V.13 illustrates the estimated financial impacts (represented by changes in INPV) of new energy conservation standards on manufacturers of compressors, as well as the conversion costs that DOE estimates manufacturers of compressors would incur at each TSL. DOE notes that the GRIM and resulting industry cash flow analysis considered only lubricated rotary equipment classes, as DOE is not establishing standards for reciprocating equipment or lubricant-free rotary equipment. For further discussion on DOE's proposal for reciprocating compressors, see section V.C.

As discussed in section IV.J.2, DOE modeled two different conversion cost scenarios to evaluate the range of cash flow impacts on the compressor industry: (1) A low conversion cost scenario; and (2) a high conversion cost scenario.

Specifically, the two scenarios explore uncertainty in conversion costs, as they relate to the draft EU minimum energy efficiency standards for air compressors. During confidential interviews, multiple manufactures indicated that they sell similar equipment in the U.S. and the EU. They also indicated that if the EU adopted the draft standard for air compressors, the efficiency of some equipment sold in the U.S. would be improved by windfall. As such, when the EU standard takes effect, which would be phased in from 2018 to 2020, a significant amount of globally marketed equipment would already exhibit improved efficiency, regardless of a DOE standard. However, because the EU standard is not yet adopted, DOE chose to use a scenario analysis to evaluate its potential impacts on conversion costs.

The low conversion cost scenario assumes that manufacturers active in the EU market will not face additional product conversion costs to adapt to a U.S. standard that is at or below the draft EU level (EL 3 and TSL 3). If the U.S. standard is above the EU level, these manufacturers would still incur full redesign costs. In the high conversion cost scenario, all manufacturers face full product conversion costs, regardless of an EU regulation. DOE notes that manufacturers that are not active in the EU market will face the same conversion costs, regardless of the scenario.

To evaluate the magnitude of each product and capital conversion cost scenario, DOE relied on cost estimates provided by representative manufacturers as well as estimates and appraisals provided by consultants familiar with air compressor and general industrial manufacturing.

Additional details on the conversion cost scenarios can be found in chapter 12 of this final rule TSD.

In the following discussion, the INPV results refer to the difference in industry value between the no-new-standards case ''business as usual'' and each standards case resulting from the sum of discounted cash flows from 2016 to 2051. To provide perspective on the short-run cash flow impact, DOE includes in the discussion of results a comparison of free cash flow between the no-new-standards case and the standards case at each TSL in the year before standards would take effect. This figure provides an understanding of the magnitude of required conversion costs related to cash flows generated by the industry in the no-new-standards case. Table V.12 and Table V.13 present INPV results under the low and high conversion cost scenarios. The low conversion cost scenario represents the least severe set of impacts while the high conversion cost scenario represents the most severe set of impacts. Markups do not vary with conversion cost scenarios.

TABLE V.12—MANUFACTURER IMPACT ANALYSIS RESULTS FOR COMPRESSORS: LOW CONVERSION COST SCENARIO

	Units	No new standard case	Trial standard level *					
			1	2	3	4	5	6
INPV	2015$M	409.7	389.0	367.8	262.0	149.2	98.4	70.0
Change in INPV	2015$M		(20.7)	(42.0)	(147.8)	(260.5)	(311.3)	(339.8)
	%		(5.1)	(10.2)	(36.1)	(63.6)	(76.0)	(82.9)
Product Conversion Costs	2015$M		41.2	74.4	206.7	355.5	426.5	496.1
Capital Conversion Costs	2015$M		6.1	23.7	73.8	98.0	119.1	140.4
Total Conversion Costs	2015$M		47.3	98.1	280.5	453.5	545.6	636.4
Free Cash Flow	2015$M	25.2	8.8	(10.1)	(89.9)	(166.4)	(207.2)	(247.4)
	% Change		(65.1)	(140.0)	(456.8)	(760.6)	(922.6)	(1082.4)

* Parentheses indicate negative values.

TABLE V.13—MANUFACTURER IMPACT ANALYSIS RESULTS FOR COMPRESSORS: HIGH CONVERSION COST SCENARIO

	Units	No new standard case	Trial standard level *					
			1	2	3	4	5	6
INPV	2015$M	409.7	384.8	354.6	204.6	136.6	83.2	52.0
Change in INPV	2015$M		(25.0)	(55.1)	(205.2)	(273.1)	(326.6)	(357.7)
	%		(6.1)	(13.5)	(50.1)	(66.7)	(79.7)	(87.3)
Product Conversion Costs	2015$M		49.3	97.6	289.9	373.6	448.5	521.9
Capital Conversion Costs	2015$M		6.1	23.7	73.8	98.0	119.1	140.4
Total Conversion Costs	2015$M		55.4	121.3	363.7	471.6	567.6	662.3
Free Cash Flow	2015$M	25.2	6.1	(19.2)	(126.6)	(174.4)	(216.9)	(258.8)
	% Change		(75.7)	(176.3)	(602.4)	(792.3)	(961.1)	(1127.6)

* Parentheses indicate negative values.

TSL 1 represents EL 1 for lubricated rotary compressors. At TSL 1, DOE estimates the impacts on INPV to range from −$25.0 million to −$20.7 million, or a change of −6.1-percent to −5.1-percent. Industry free cash flow is estimated to change by −$19.1 million to −$16.4 million, or a change of −75.7-percent to −65.1-percent compared to the no-new-standards case value of $25.2 million in the year before the compliance date (2021). DOE estimates industry conversion costs of as high as $55.4 million to $47.3 million at TSL 1.

TSL 2 represents EL 2 lubricated rotary compressors. At TSL 2, DOE estimates impacts on INPV to range from −$55.1 million to −$42.0 million, or a change in INPV of −13.5-percent to −10.2-percent. At this level, industry free cash flow is estimated to change by −$44.4 million to −$35.3 million, or a change of −176.3-percent to −140.0-percent compared to the no-new-standards case value of $25.2 million in the year before the compliance date (2021). DOE estimates industry conversion costs of as high as $121.3 million to $98.1 million at TSL 2.

TSL 3 represents EL 3 for lubricated rotary compressors. At TSL 3, DOE estimates impacts on INPV of −$205.2 million to −$147.8 million, or a change in INPV of −50.1-percent to −36.1-percent. At this level, industry free cash flow is estimated to change by −$151.7 million to −$115.1 million, or a change of −602.4-percent to −456.8-percent compared to the no-new-standards case value of $25.2 million in the year before the compliance date (2021). DOE estimates industry conversion costs of as high as $363.7 million to $280.5 million at TSL 3.

TSL 4 represents EL 4 for lubricated rotary compressors. At TSL 4, DOE estimates impacts on INPV of −$273.1 million to −$260.5, or a change in INPV of −66.7-percent to −63.6-percent. At this level, industry free cash flow is estimated to change by −$199.6 million to −$191.6 million, or a change of −792.3-percent to −760.6-percent compared to the no-new-standards case value of $25.2 million in the year before the compliance date (2021). DOE estimates industry conversion costs of as high as $471.6 million to $453.5 million at TSL 4.

TSL 5 represents EL 5 for lubricated rotary compressors. At TSL 5, DOE estimates impacts on INPV of −$326.6 million to −$311.3, or a change in INPV of −79.7-percent to −76.0-percent. Industry free cash flow is estimated to change by −$242.1 million to −$232.4 million or a change of −961.1-percent to −922.6-percent compared to the no-new-standards case value of $25.2 million in the year before the compliance date (2021). DOE estimates industry conversion costs of as high as $567.6 million to $545.6 million at TSL 5.

TSL 6 represents EL 6 for lubricated rotary compressors. At TSL 6, DOE estimates impacts on INPV of −$357.7 to −$339.8 million, or a change in INPV of −87.3-percent to −82.9-percent. Industry free cash flow is estimated to change by −$284.0 million to −$272.6 million, or a change of −1,127.6-percent to −1,082.4-percent compared to the no-new-standards case value of $25.2 million in the year before the compliance date (2021). DOE estimates industry conversion costs of as high as $662.3 to $636.4 million at TSL 6.

b. Direct Impacts on Employment

To quantitatively assess the potential impacts of new energy conservation standards on direct employment in the compressor industry, DOE used the GRIM to estimate the domestic labor expenditures and number of direct employees in the no-new-standards case and in each of the standards cases during the analysis period. DOE used statistical data from the U.S. Census Bureau's 2014 ASM, the results of the engineering analysis, and interviews with manufacturers to determine the inputs necessary to calculate industry-wide labor expenditures and domestic employment levels. Labor expenditures related to manufacturing of the equipment are a function of the labor intensity of the product, the sales volume, and an assumption that wages remain fixed in real terms over time. The total labor expenditures in each year are calculated by multiplying the MPCs by the labor percentage of MPCs.

The total labor expenditures in the GRIM were then converted to domestic production employment levels by dividing production labor expenditures by the annual payment per production worker (production worker hours multiplied by the labor rate found in the U.S. Census Bureau's 2014 Annual Survey of Manufacturers (''ASM'')). The production worker estimates in this section only cover workers up to the line-supervisor level who are directly involved in fabricating and assembling equipment within an OEM facility. Workers performing services that are closely associated with production operations, such as materials handling tasks using forklifts, are also included as production labor.

To calculate non-production workers, the GRIM assumes non-production workers account for 42-percent of direct employment, which is a ratio derived from 2014 ASM data. The direct employment impacts calculated in the GRIM are the sum of the changes in the number of domestic production and non-production workers resulting from the new energy conservation standards for compressors, as compared to the no-new-standards case. In general, more-efficiency compressors are complex and more labor intensive. Per-unit labor requirements and production time requirements increase with higher energy conversation standards.

To estimate an upper bound to employment change, DOE assumes all domestic manufacturers would choose to continue producing equipment in the U.S. and would not move production to foreign countries. To estimate a lower bound to employment, DOE considers the case where all manufacturers choose

to relocate production of failing rotary compressors with a compressor motor nominal horsepower under 50 hp overseas rather than make the necessary conversions at domestic production facilities. A complete description of the assumptions used to generate these upper and lower bounds can be found in chapter 12 of the NOPR TSD.

In the absence of energy conservation standards, DOE estimates that the rotary air compressors industry would employ 1,313 domestic production workers and 962 domestic non-production workers in 2022, the year of compliance. Table V.14 shows the range of impacts of potential energy conservation standards on U.S. production workers of air compressors.

At the NOPR stage, DOE estimated 1,417 production workers in the no-new-standards case for the compressor industry in 2022. For the final rule, DOE updated its analysis based on 2014 U.S. Census data, the updated engineering analysis, and the updated shipments analysis. DOE's revised final rule analysis forecasts that the industry will employ 2,275 production and non-production workers in the compressor industry in 2022 in the absence of new energy conservation standards. DOE estimates that approximately 50-percent of rotary air compressors sold in the United States are manufactured domestically. The final rule analysis presents an updated set of direct employment impacts that range from a net loss of 1,256 to a gain of 42 jobs at the standard level. Therefore, DOE's analysis agrees with the statements from the industry that there is a risk of decreasing the number of manufacturing jobs related to the covered equipment. Table V.14 shows the range of impacts of new energy conservation standards of this final rule on U.S. production workers of compressors.

TABLE V.14—POTENTIAL CHANGES IN THE COMPRESSORS DIRECT EMPLOYMENT IN 2022

	Trial standard level*						
	No-new-standards case	1	2	3	4	5	6
Number of Domestic Production Workers.	1,313	1,225 to 1,343	1,059 to 1,391	654 to 1,468	434 to 1,507	219 to 1,580	28 to 1,776.
Change in Domestic Production Workers.		(88) to 30	(254) to 78	(659) to 155	(878) to 194	(1,094) to 267	(1,285) to 463.
Domestic Direct Employment**.	2,275	2,123 to 2,327	1,835 to 2,410	1,133 to 2,544	753 to 2,611	379 to 2,738	49 to 3,078.
Potential Changes in Direct Employment.		(152) to 52	(439) to 135	(1,142) to 269	(1,522) to 336	(1,896) to 463	(2,226) to 803.

*DOE presents a range of potential employment impacts. Numbers in parentheses indicate negative numbers.
**This field presents impacts on domestic direct employment, which aggregates production and non-production workers. Based on ASM census data, DOE assumed the ratio of production to non-production employees stays consistent across all analyzed TSLs, which is 42 percent non-production workers.

At the upper end of the range, all examined TSLs show positive impacts on domestic employment levels. Producing more-efficient compressors tends to require more labor, and DOE estimates that if compressor manufacturers chose to keep their current production in the U.S., domestic employment could increase at each TSL.

The lower end of the range represents the maximum decrease in the number of U.S. production workers that could result from an energy conservation standard. In interviews, manufacturers stated that the domestic compressor industry has seen limited migration to foreign production facilities. While many compressors are currently manufactured in foreign production facilities, this is more often the result of the global operations of many manufacturers, rather than off-shoring of former U.S. production. However, manufacturers that currently produce in the U.S. have indicated they could potentially shift some production of some covered equipment to foreign facilities in order to take advantage of lower labor costs and/or global economies of scale, if standards erode the economic benefits of manufacturing domestically. Manufacturers also stated that smaller, lower compressor motor nominal horsepower compressors, rather than larger, higher nominal horsepower compressors, are more likely to shift to foreign production. Given the uncertainty surrounding potential off-shoring decisions, manufacturers were unable to pinpoint a specific nominal horsepower cutoff for ''lower horsepower compressors.'' However, based on qualitative discussions with manufacturers, DOE estimates that 50 nominal hp is an appropriate cutoff to represent ''lower horsepower compressors.'' As a result, the lower bound of direct employment impacts assumes manufacturers choose to relocate production of failing rotary compressors under 50 nominal hp overseas rather than make the necessary conversions at domestic production facilities.

DOE notes that the employment impacts discussed here are independent of the indirect employment impacts to the broader U.S. economy, which are documented in chapter 15 of the final rule TSD.

c. Impacts on Manufacturing Capacity

In interviews, manufacturers of compressors did not indicate that new energy conservation standards would significantly constrain manufacturing production capacity. However, as discussed in section IV.J of the NOPR, manufacturers expressed concern that they may face a bottleneck in the redesign process. In other words, manufacturers felt that if they could complete their redesigns within the compliance period, then they would not have a problem obtaining sufficient floor space, equipment, and manufacturing labor to meet the shipment demands of the market, following an energy conservation standard.

Manufacturers indicated that most experienced compressor design engineers are already employed within the industry, which limits their ability to rapidly expand their research and development teams if faced with a high volume of required compressor redesigns. Consequently, manufacturers typically commented that standard levels at or above the equivalent of TSL 3 could cause engineering constraints which might create time delays in complying with new standards. DOE notes that manufacturers typically discussed this constraint with respect to a three-year compliance period. In this final rule, however, DOE is establishing a standard level at TSL 2, in conjunction with a five-year compliance period.

d. Impacts on Subgroups of Manufacturers

As discussed previously, using average cost assumptions to develop an

industry cash flow estimate is not adequate for assessing differential impacts among subgroups of manufacturers. The rule could affect small manufacturers, niche players, or manufacturers exhibiting a cost structure that differs largely from the industry average, differently. DOE used the results of the industry characterization to group manufacturers exhibiting similar characteristics. Specifically, DOE identified small business manufacturers as a subgroup for a separate impact analysis.

For the small business subgroup analysis, DOE applied the small business size standards published by the Small Business Administration (SBA) to determine whether a company is considered a small business. (65 FR 30840, 30849 (May 15, 2000), as amended at 65 FR 53533, 53544 (September 5, 2000), and codified at 13 CFR part 121.) To be categorized as a small business manufacturer of compressors under North American Industry Classification System (''NAICS'') code 333912, ''Air and Gas Compressor Manufacturing,'' a compressor manufacturer and its affiliates may employ a maximum of 1,000 employees. The 1,000-employee threshold includes all employees in a business's parent company and any other subsidiaries. Based on this classification, DOE identified 15 manufacturers of rotary air compressors. The small business subgroup analysis is discussed in section VII.B of this document and in chapter 12 of the NOPR TSD.

e. Cumulative Regulatory Burden

One aspect of assessing manufacturer burden involves looking at the cumulative impact of multiple DOE standards and at the regulatory actions of other Federal agencies and States that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

For the cumulative regulatory burden analysis, DOE looks at other regulations that could affect compressor manufacturers during the compliance period, from 2016 to 2022, or those that will take effect approximately three years after the 2022 compliance date of new energy conservation standards for this equipment. The compliance years and expected industry conversion costs of relevant energy conservation standards are indicated in Table V.15. Included in the table are Federal regulations that have compliance dates beyond the range of DOE's analysis.

TABLE V.15—COMPLIANCE DATES AND EXPECTED CONVERSION EXPENSES OF FEDERAL ENERGY CONSERVATION STANDARDS AFFECTING COMPRESSOR MANUFACTURERS

Federal energy conservation standard	Number of manufacturers *	Number of manufacturers affected from this final rule **	Approx. standards year	Industry conversion costs (millions $)	Industry conversion costs/revenue ***
Commercial Refrigeration Equipment, 79 FR 17725 (March 28, 2014).	54	1	2017	184.0 (2012$)	1.5%.
Commercial Packaged Air Conditioners and Heat Pumps (Air-Cooled), 81 FR 2420 (January 15, 2016).	13	1	2018 and 2023	520.8 (2014$)	4.4%.
Automatic Commercial Ice Makers, 80 FR 4645 (January 28, 2015)	16	1	2018	25.1 (2013$)	2.3%.
External Power Supplies and Battery Chargers, 81 FR 38266 (June 13, 2016).	30	2	2018	19.5 (2013$)	Less than 1%.
Uninterruptible Power Supplies,† 81 FR 52196 (August 5, 2016)	48	1	2019	20.0 (2015$)	Less than 1%.
Residential Furnace Fans, 79 FR 38129 (July 3, 2014)	38	1	2019	40.6 (2014$)	1.6%.
Commercial Packaged Boilers,† 81 FR 15836 (March 24, 2016)	45	1	2022	27.5 (2014$)	2.3%.
Residential Furnaces,† 80 FR 13120 (September 2, 2016)	13	1	2022	54.7 (2015$)	1%.
Central Air Conditioners and Heat Pumps,† 80 FR 52206 (August 25, 2015).	30	1	2023	342.6 (2015$)	Less than 1%.
Commercial Warm Air Furnaces, 81 FR 2420 (January 15, 2016)	14	1	2023	7.5 to 22.2 (2014$) ‡.	1.7% to 5.2%.‡

* This column presents the total number of manufacturers identified in the energy conservation standard rule contributing to cumulative regulatory burden.

** This column presents the number of manufacturers producing compressor equipment that are also listed as manufacturers in the listed energy conservation standard contributing to cumulative regulatory burden.

*** This column presents conversion costs as a percentage of cumulative revenue for the industry during the conversion period. The conversion period is the time-frame over which manufacturers must make conversion costs investments and lasts from the announcement year of the final rule to the standards year of the final rule. This period typically ranges from 3 to 5 years, depending on the energy conservation standard.

† The final rule for this energy conservation standard has not been published. The compliance date and analysis of conversion costs have not been finalized at this time. (If a value is provided for total industry conversion expense, this value represents an estimate from the NOPR.)

‡ Low and high conversion cost scenarios were analyzed as part of this Direct Final Rule. The range of estimated conversion expenses presented here reflects those two scenarios.

DOE also identified other regulatory burdens that will affect manufacturers of compressors, such as international energy conservation standards and EPA Tier IV emission regulation.

International Energy Conservation Standards

Compressor manufacturers that sell equipment outside of the United States are subject to several international energy conservation standards. In 2015, the European Union introduced energy efficiency regulation for compressors, which included standards for reciprocating and rotary air compressors. Several stakeholders cited concerns regarding DOE's less stringent standard for rotary compressors compared to the EU's current standard. For the test procedure final rule, DOE excludes lubricated compressors from the scope of test procedures in part to help manufacturers harmonize with the EU's regulatory standards for compressors.

EPA Tier IV Emission Regulation

In 2014, the EPA adopted multiple tiers of emissions standards, including Tier IV regulation, which falls under a comprehensive national program to reduce emissions from non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest emission reductions. To meet Tier IV emission standards, engine

manufacturers will be required to produce new engines with advanced emission control technologies. DOE received comments from Sullivan-Palatek stating concerns resulting from Tier IV regulation. Due to the EPA emission standards, many product voids have resulted that may take years to repair since manufacturers are still bearing the cost of this regulation. Sullivan-Palatek also stated that the destruction of product demand caused by the Tier IV regulation due to substantially higher costs and complex maintenance for end customers has been burdensome for the industry. Because customers have the option to operate and repair at least two decades of used compressors rather than purchasing new machines, the US market for the Tier IV portable compressors has declined by about 70%. (Sullivan-Palatek, No. 51 at p. 8)

In response, DOE does not include rulemakings in its cumulative regulatory analysis that take effect more than three years before or after the effective date of this final rule standard. Therefore, there may be other standards required of manufacturers that were excluded from the cumulative regulatory burden analysis. As outlined in appendix A to 10 CFR part 430, subpart C, DOE considers other significant product-specific regulations that will take effect within three years of the effective date of the standard under consideration and will affect significantly the same manufacturers. (Section 10(g)(2), 10 CFR part 430, subpart C, appendix A.)

3. National Impact Analysis

This section presents DOE's estimates of the national energy savings and the NPV of consumer benefits that would result from each of the TSLs considered as potential new standards.

a. Significance of Energy Savings

To estimate the energy savings attributable to potential standards for compressors, DOE compared their energy consumption under the no-new-standards case to their anticipated energy consumption under each TSL. The savings are measured over the entire lifetime of products purchased in the 30-year period that begins in the year of anticipated compliance with new standards (2022–2051). Table V.16 presents DOE's projections of the national energy savings for each TSL considered for compressors. The savings were calculated using the approach described in section IV.H of this document.

TABLE V.16—CUMULATIVE NATIONAL ENERGY SAVINGS FOR COMPRESSORS; 30 YEARS OF SHIPMENTS

[2022–2051]

	Trial standard level					
	1	2	3	4	5	6
	(quads)					
Primary energy	0.03	0.15	0.43	0.59	0.87	1.59
FFC energy	0.03	0.16	0.45	0.61	0.91	1.66

OMB Circular A–4 [114] requires agencies to present analytical results, including separate schedules of the monetized benefits and costs that show the type and timing of benefits and costs. Circular A–4 also directs agencies to consider the variability of key elements underlying the estimates of benefits and costs. For this rulemaking, DOE undertook a sensitivity analysis using 9 years, rather than 30 years of product shipments. The choice of a 9-year period is a proxy for the timeline in 42 U.S.C. 6295(m) and 42 U.S.C. 6316(a)) for the review of certain energy conservation standards and potential revision of and compliance with such revised standards.[115] The review timeframe established in 42 U.S.C. 6295(m) and 42 U.S.C. 6316(a)) is generally not synchronized with the product lifetime, product manufacturing cycles, or other factors specific to compressors. Thus, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology. The NES sensitivity analysis results based on a 9-year analytical period are presented in Table V.17. The impacts are counted over the lifetime of compressors purchased in 2022–2030.

TABLE V.17—CUMULATIVE NATIONAL ENERGY SAVINGS FOR COMPRESSORS; 9 YEARS OF SHIPMENTS

[2022–2030]

	Trial standard level					
	1	2	3	4	5	6
	(quads)					
Primary energy	0.01	0.04	0.11	0.15	0.22	0.40
FFC energy	0.01	0.04	0.11	0.15	0.23	0.41

[114] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

[115] Section 325(m) of EPCA requires DOE to review its standards at least once every 6 years, and requires, for certain products, a 3-year period after any new standard is promulgated before compliance is required, except that in no case may any new standards be required within 6 years of the compliance date of the previous standards. While adding a 6-year review to the 3-year compliance period adds up to 9 years, DOE notes that it may undertake reviews at any time within the 6-year period and that the 3-year compliance date may yield to the 6-year backstop. A 9-year analysis period may not be appropriate given the variability that occurs in the timing of standards reviews and the fact that for some products, the compliance period is 5 years rather than 3 years.

b. Net Present Value of Consumer Costs and Benefits

DOE estimated the cumulative NPV of the total costs and savings for consumers that would result from the TSLs considered for compressors. In accordance with OMB's guidelines on regulatory analysis,[116] DOE calculated NPV using both a 7-percent and a 3-percent real discount rate. Table V.18 shows the consumer NPV results with impacts counted over the lifetime of products purchased in 2022–2051.

TABLE V.18—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR COMPRESSORS; 30 YEARS OF SHIPMENTS

[2022–2051]

Discount rate	Trial standard level (billion 2015$)					
	1	2	3	4	5	6
3 percent	0.1	0.4	1.2	1.5	2.1	3.3
7 percent	0.0	0.2	0.4	0.5	0.7	1.0

The NPV results based on the aforementioned 9-year analytical period are presented in Table V.19. The impacts are counted over the lifetime of products purchased in 2022–2030. As mentioned previously, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology or decision criteria.

TABLE V.19—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR COMPRESSORS; 9 YEARS OF SHIPMENTS

[2022–2030]

Discount rate	Trial standard level (billion 2015$)					
	1	2	3	4	5	6
3 percent	0.0	0.2	0.4	0.5	0.7	1.1
7 percent	0.0	0.1	0.2	0.2	0.3	0.5

The above results reflect the use of a default constant trend to estimate the change in price for compressors over the analysis period (see section IV.F.1 of this document). DOE also conducted a sensitivity analysis that considered one scenario with a lower rate of price decline than the reference case and one scenario with a higher rate of price decline than the reference case. The results of these alternative cases are presented in appendix 10B of the final rule TSD. In the high-price-decline case, the NPV of consumer benefits is higher than in the default case. In the low-price-decline case, the NPV of consumer benefits is lower than in the default case.

c. Indirect Impacts on Employment

DOE expects that energy conservation standards for compressors will reduce energy expenditures for consumers of those products, with the resulting net savings being redirected to other forms of economic activity. These expected shifts in spending and economic activity could affect the demand for labor. As described in section IV.N of this document, DOE used an input/output model of the U.S. economy to estimate indirect employment impacts of the TSLs that DOE considered. DOE understands that there are uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Therefore, DOE generated results for near-term timeframes (2022–2027), where these uncertainties are reduced.

The results suggest that the adopted standards are likely to have a negligible impact on the net demand for labor in the economy. The net change in jobs is so small that it would be imperceptible in national labor statistics and might be offset by other, unanticipated effects on employment. Chapter 16 of the final rule TSD presents detailed results regarding anticipated indirect employment impacts.

4. Impact on Utility or Performance of Products

As discussed in section III.H.1.d of this document, DOE has concludes that the standards adopted in this final rule will not lessen the utility or performance of the compressors under consideration in this rulemaking. Manufacturers of these products currently offer units that meet or exceed the adopted standards.

5. Impact of Any Lessening of Competition

DOE considered any lessening of competition that would be likely to result from new or amended standards. As discussed in section III.H.1.e of this document, EPCA directs the Attorney General of the United States (''Attorney General'') to determine the impact, if any, of any lessening of competition likely to result from a proposed standard and to transmit such determination in writing to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. To assist the Attorney General in making this determination, DOE provided DOJ with copies of the NOPR and the TSD for review. In its assessment letter responding to DOE, DOJ concludes that the proposed energy conservation standards for compressors are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

[116] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

6. Need of the Nation To Conserve Energy

Enhanced energy efficiency, where economically justified, improves the Nation's energy security, strengthens the economy, and reduces the environmental impacts (costs) of energy production. Reduced electricity demand due to energy conservation standards is also likely to reduce the cost of maintaining the reliability of the electricity system, particularly during peak-load periods. As a measure of this reduced demand, chapter 15 in the final rule TSD presents the estimated reduction in generating capacity, relative to the no-new-standards case, for the TSLs that DOE considered in this rulemaking.

Energy conservation resulting from energy conservation standards for compressors is expected to yield environmental benefits in the form of reduced emissions of certain air pollutants and greenhouse gases. Table V.20 provides DOE's estimate of cumulative emissions reductions expected to result from the TSLs considered in this rulemaking. The table includes both power sector emissions and upstream emissions. The emissions were calculated using the method discussed in section IV.K of this document. DOE reports annual emissions reductions for each TSL in chapter 13 of the final rule TSD.

TABLE V.20—CUMULATIVE EMISSIONS REDUCTION FOR COMPRESSORS SHIPPED IN 2022–2051

	Trial standard level					
	1	2	3	4	5	6
Power Sector Emissions						
CO_2 (*million metric tons*)	1.5	7.8	21.9	29.8	44.1	80.5
SO_2 (*thousand tons*)	1.3	6.5	18.2	24.8	36.7	67.0
NO_X (*thousand tons*)	0.9	4.5	12.7	17.3	25.6	46.8
Hg (*tons*)	0.00	0.02	0.06	0.08	0.12	0.22
CH_4 (*thousand tons*)	0.2	0.8	2.4	3.2	4.8	8.7
N_2O (*thousand tons*)	0.0	0.1	0.3	0.5	0.7	1.2
Upstream Emissions						
CO_2 (*million metric tons*)	0.1	0.4	1.2	1.7	2.5	4.6
SO_2 (*thousand tons*)	0.0	0.1	0.1	0.2	0.3	0.5
NO_X (*thousand tons*)	1.3	6.5	18.3	24.8	36.8	67.2
Hg (*tons*)	0.00	0.00	0.00	0.00	0.00	0.00
CH_4 (*thousand tons*)	7.9	39.9	112.8	153.3	227.3	414.7
N_2O (*thousand tons*)	0.0	0.0	0.0	0.0	0.0	0.0
Total FFC Emissions						
CO_2 (*million metric tons*)	1.6	8.2	23.1	31.4	46.6	85.1
SO_2 (*thousand tons*)	1.3	6.5	18.4	25.0	37.0	67.6
NO_X (*thousand tons*)	2.2	11.0	31.0	42.1	62.5	114.0
Hg (*tons*)	0.00	0.02	0.06	0.08	0.12	0.22
CH_4 (*thousand tons*)	8.1	40.8	115.2	156.5	232.0	423.5
N_2O (*thousand tons*)	0.0	0.1	0.3	0.5	0.7	1.3

As part of the analysis for this rule, DOE estimated monetary benefits likely to result from the reduced emissions of CO_2 for each of the considered TSLs for compressors. As discussed in section IV.L of this document, DOE used the most recent values for the SC-CO_2 developed by the interagency working group. The four sets of SC-CO_2 values correspond to the average values from distributions that use a 5-percent discount rate, a 3-percent discount rate, and a 2.5-percent discount rate, and the 95th-percentile values from a distribution that uses a 3-percent discount rate. The actual SC-CO_2 values used for emissions in each year are presented in appendix 14A of the final rule TSD.

Table V.21 presents the global value of the CO_2 emissions reduction at each TSL. DOE calculated domestic values as a range from 7-percent to 23-percent of the global values; these results are presented in chapter 14 of the final rule TSD.

TABLE V.21—PRESENT VALUE OF GHG EMISSIONS REDUCTION FOR COMPRESSORS SHIPPED IN 2022–2051

Trial standard level	SC-CO_2 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	10.5	49.5	79.2	150.9
2	52.8	250.0	400.4	762.2
3	149.2	706.1	1,131.2	2,153.2
4	202.7	959.4	1,536.8	2,925.4
5	300.6	1,422.4	2,278.6	4,337.3

TABLE V.21—PRESENT VALUE OF GHG EMISSIONS REDUCTION FOR COMPRESSORS SHIPPED IN 2022–2051—Continued

Trial standard level	SC-CO_2 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
6	548.5	2,595.7	4,158.1	7,915.0

* For each of the four cases, the corresponding SCC value for emissions in 2020 is $13.5, $47.4, $63.2, and $118 per metric ton (2015$). The values are for CO_2 only (*i.e.,* not CO_{2eq} of other greenhouse gases).

As discussed in section IV.L.2, DOE estimated monetary benefits likely to result from the reduced emissions of methane and N_2O that DOE estimated for each of the considered TSLs for compressors. DOE used the recent values for the SC-CH_4 and SC-N_2O developed by the interagency working group. Table V–22 presents the value of the CH_4 emissions reduction at each TSL, and Table V–23 presents the value of the N_2O emissions reduction at each TSL.

TABLE V.22—PRESENT VALUE OF METHANE EMISSIONS REDUCTION FOR COMPRESSORS SHIPPED IN 2022–2051

TSL	SC-CH_4 case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	2.3	7.8	11.2	20.9
2	11.8	39.4	56.5	105.4
3	33.4	111.4	159.7	297.6
4	45.4	151.3	217.0	404.3
5	67.3	224.3	321.7	599.5
6	122.9	409.3	587.0	1,094.0

TABLE V.23—PRESENT VALUE OF NITROUS OXIDE EMISSIONS REDUCTION FOR COMPRESSORS SHIPPED IN 2022–2051

TSL	SC-N_2O case			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
1	0.1	0.3	0.4	0.7
2	0.3	1.3	2.1	3.5
3	0.8	3.7	5.9	9.9
4	1.1	5.0	8.0	13.4
5	1.7	7.4	11.9	19.9
6	3.1	13.6	21.7	36.2

DOE is well aware that scientific and economic knowledge about the contribution of CO_2 and other GHG emissions to changes in the future global climate and the potential resulting damages to the world economy continues to evolve rapidly. Thus, any value placed on reduced GHG emissions in this rulemaking is subject to change. DOE, together with other Federal agencies, will continue to review various methodologies for estimating the monetary value of reductions in CO_2 and other GHG emissions. This ongoing review will consider the comments on this subject that are part of the public record for this and other rulemakings, as well as other methodological assumptions and issues. Consistent with DOE's legal obligations, and taking into account the uncertainty involved with this particular issue, DOE has included in this rule the most recent values resulting from the interagency review process. DOE notes, however, that the adopted standards would be economically justified even without inclusion of monetized benefits of reduced GHG emissions.

DOE also estimated the monetary value of the economic benefits associated with NO_X emissions reductions anticipated to result from the considered TSLs for compressors. The dollar-per-ton values that DOE used are discussed in section IV.L of this document. Table V.24 presents the present value for NO_X emissions reduction for each TSL calculated using 7-percent and 3-percent discount rates. This table presents results that use the low benefit-per-ton values, which reflect DOE's primary estimate.

TABLE V.24—ESTIMATES OF PRESENT VALUE OF NO_X EMISSIONS REDUCTION FOR COMPRESSORS SHIPPED IN 2022–2051 *

TSL	3% Discount rate	7% Discount rate
	(million 2015$)	
1	3.3	1.2
2	16.8	6.1
3	47.4	17.4
4	64.4	23.6
5	95.5	35.0
6	174.3	63.8

* Results are based on the low benefit-per-ton values.

7. Other Factors

The Secretary of Energy, in determining whether a standard is economically justified, may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII) and 42 U.S.C. 6316(a)) No other factors were considered in this analysis.

8. Summary of National Economic Impacts

Table V.25 presents the NPV values that result from adding the estimates of the potential economic benefits resulting from reduced GHG and NO_X emissions to the NPV of consumer savings calculated for each TSL considered in this rulemaking.

TABLE V.25—CONSUMER NPV COMBINED WITH PRESENT VALUE OF BENEFITS FROM EMISSIONS REDUCTIONS

TSL	Consumer NPV and low NO_X values at 3% discount rate added with:			
	GHG 5% discount rate, average case	GHG 3% discount rate, average case	GHG 2.5% discount rate, average case	GHG 3% discount rate, 95th percentile case
	(billion 2015$)			
1	0.11	0.16	0.19	0.27
2	0.53	0.75	0.92	1.33
3	1.38	2.02	2.50	3.66
4	1.82	2.68	3.33	4.91
5	2.55	3.83	4.79	7.13
6	4.11	6.46	8.20	12.48
TSL	Consumer NPV and low NO_X values at 7% discount rate added with:			
	GHG 5% discount rate, average case	GHG 3% discount rate, average case	GHG 3% discount rate, average case	GHG 3% discount rate, 95th percentile case
	(billion 2015$)			
1	0.05	0.09	0.13	0.21
2	0.23	0.46	0.63	1.04
3	0.60	1.24	1.71	2.88
4	0.78	1.65	2.30	3.88
5	1.09	2.37	3.33	5.67
6	1.72	4.06	5.81	10.09

Note: The GHG benefits include the estimated benefits for reductions in CO_2, CH_4, and N_2O emissions using the four sets of SC-CO_2, SC-CH_4, and SC-N_2O values developed by the interagency working group.

The national operating cost savings are domestic U.S. monetary savings that occur as a result of purchasing the covered compressors, and are measured for the lifetime of products shipped in 2022–2051. The benefits associated with reduced GHG emissions achieved as a result of the adopted standards are also calculated based on the lifetime of compressors shipped in 2022–2051. However, the GHG reduction is a benefit that accrues globally. Because CO_2 emissions have a very long residence time in the atmosphere, the SC-CO_2 values for future emissions reflect climate-related impacts that continue through 2300.

C. Conclusion

When considering new or amended energy conservation standards, the standards that DOE adopts for any type (or class) of covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A) and 42 U.S.C. 6316(a)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable,

considering the seven statutory factors discussed previously. (42 U.S.C. 6295(o)(2)(B)(i) and 42 U.S.C. 6316(a)) The new or amended standard must also result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B) and 42 U.S.C. 6316(a))

For this final rule, DOE considered the impacts of standards for compressors at each TSL, beginning with the maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest efficiency level that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader as DOE discusses the benefits and/or burdens of each TSL, tables in this section present a summary of the results of DOE's quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers who may be disproportionately affected by a national standard and impacts on employment.

1. Benefits and Burdens of TSLs Considered for Compressors Standards

Table V.26 and Table V.27 summarize the quantitative impacts estimated for each TSL for compressors. The national impacts are measured over the lifetime of compressors purchased in the 30-year period that begins in the anticipated year of compliance with new standards (2022–2051). The energy savings, emissions reductions, and value of emissions reductions refer to full-fuel-cycle results. The efficiency levels contained in each TSL are described in section V.A of this document.

TABLE V.26—SUMMARY OF ANALYTICAL RESULTS FOR COMPRESSORS TSLS: NATIONAL IMPACTS

Category	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5	TSL 6
Cumulative FFC National Energy Savings (quads)						
quads	0.03	0.16	0.45	0.61	0.91	1.66.
NPV of Consumer Costs and Benefits (billion 2015$)						
3% discount rate	0.10	0.45	1.15	1.50	2.08	3.26.
7% discount rate	0.04	0.16	0.40	0.51	0.68	0.98.
Cumulative FFC Emissions Reduction						
CO_2 (*million metric tons*)	1.6	8.2	23.1	31.4	46.6	85.1.
SO_2 (*thousand tons*)	1.3	6.5	18.4	25.0	37.0	67.6.
NO_X (*thousand tons*)	2.2	11.0	31.0	42.1	62.5	114.0.
Hg (*tons*)	0.00	0.02	0.06	0.08	0.12	0.22.
CH_4 (*thousand tons*)	8.1	40.8	115.2	156.5	232.0	423.5.
N_2O (*thousand tons*)	0.0	0.1	0.3	0.5	0.7	1.3.
Value of Emissions Reduction						
CO_2 (*billion 2015$*)*	0.01 to 0.15	0.05 to 0.76	0.15 to 2.15	0.20 to 2.93	0.30 to 4.34	0.55 to 7.91.
CH_4 (*billion 2015$*)	0.00 to 0.02	0.01 to 0.11	0.03 to 0.30	0.05 to 0.40	0.07 to 0.60	0.12 to 1.09.
N_2O (*billion 2015$*)	0.000 to 0.001	0.000 to 0.003	0.001 to 0.010	0.001 to 0.013	0.002 to 0.020	0.003 to 0.036.
NO_X—3% discount rate (*million 2015$*)	3.3 to 7.5	16.8 to 37.9	47.4 to 107.1	64.4 to 145.5	95.5 to 215.7	174.3 to 393.6.
NO_X—7% discount rate (*million 2015$*)	1.2 to 2.8	6.1 to 13.9	17.4 to 39.3	23.6 to 53.4	35.0 to 79.1	63.8 to 144.3.

Parentheses indicate negative (−) values.
* Range of the economic value of CO_2 reductions is based on estimates of the global benefit of reduced CO_2 emissions.

TABLE V.27—SUMMARY OF ANALYTICAL RESULTS FOR COMPRESSORS TSLS: MANUFACTURER AND CONSUMER IMPACTS

Category	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5	TSL 6
Manufacturer Impacts						
Industry NPV (*million 2015$*) (No-new-standards case INPV = 409.7).	384.8 to 389.0	354.6 to 367.8	204.6 to 262.0	136.6 to 149.2	83.2 to 98.4	52.0 to 70.0.
Industry NPV (*% change*)	(6.1) to (5.1)	(13.5) to (10.2)	(50.1) to (36.1)	(66.7) to (63.6)	(79.7) to (76.0)	(87.3) to (82.9).
Consumer Average LCC Savings (2015$)						
RP_FS_L_AC	7,882	8,002	7,377	7,192	7,849	8,604.
RP_FS_L_WC	11,644	10,559	14,398	11,615	12,907	14,684.
RP_VS_L_AC	2,343	2,618	2,248	2,130	1,885	(41).
RP_VS_L_WC	6,199	5,145	6,118	4,496	3,918	754.
Shipment-Weighted Average*	8,172	8,086	8,225	7,599	8,293	9,011.
Consumer Simple PBP (years)						
RP_FS_L_AC	2.0	2.4	2.9	3.1	3.4	4.1.
RP_FS_L_WC	2.3	2.7	3.1	3.2	3.5	4.1.

TABLE V.27—SUMMARY OF ANALYTICAL RESULTS FOR COMPRESSORS TSLS: MANUFACTURER AND CONSUMER IMPACTS—Continued

Category	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5	TSL 6
RP_VS_L_AC	4.2	4.9	5.6	6.0	6.7	8.1.
RP_VS_L_WC	4.0	4.9	5.7	6.0	6.7	8.1.
Shipment-Weighted Average *	2.2	2.6	3.1	3.3	3.6	4.4.
Percent of Consumers that Experience a Net Cost						
RP_FS_L_AC	0	1	3	4	7	14.
RP_FS_L_WC	0	1	2	5	7	12.
RP_VS_L_AC	2	6	17	23	31	48.
RP_VS_L_WC	1	8	14	25	32	48.
Shipment-Weighted Average *	0	1	4	5	9	16.

Parentheses indicate negative (−) values.
* Weighted by shares of each equipment class in total projected shipments in 2022.

DOE first considered TSL 6, which represents the max-tech efficiency level. TSL 6 would save 1.66 quads of energy, an amount DOE considers significant. Under TSL 6, the NPV of consumer benefit would be 0.98 billion using a discount rate of 7-percent, and 3.26 billion using a discount rate of 3-percent.

The cumulative emissions reductions at TSL 6 are 85.1 Mt of CO_2, 67.6 thousand tons of SO_2, 114.0 thousand tons of NO_X, 0.22 ton of Hg, 423.5 thousand tons of CH_4, and 1.3 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 6 ranges from $548 million to $7,915 million for CO_2, from $123 million to $1,094 million for CH_4, and from $3.1 million to $36.2 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 6 is $64 million using a 7-percent discount rate and $174 million using a 3-percent discount rate.

At TSL 6, the average LCC impact is a savings of $8,604 for RP_FS_L_AC, $14,684 for RP_FS_L_WC, −$41 for RP_VS_L_AC, and $4754 for RP_VS_L_WC.[117] The simple payback period is 4.1 years for RP_FS_L_AC and RP_FS_L_WC, and 8.1 years for RP_VS_L_AC, and RP_VS_L_WC. The fraction of consumers experiencing a net LCC cost is 14-percent for RP_FS_L_AC, 12-percent for RP_FS_L_WC, 48-percent for RP_VS_L_AC, and RP_VS_L_WC.

At TSL 6, the projected change in INPV is a decrease of $357.7 million to $339.8 million. This corresponds to a net loss of 87.3-percent to 82.9-percent in INPV for manufacturers.

The Secretary concludes that at TSL 6 for compressors, the benefits of energy savings, emission reductions, and the estimated monetary value of the emissions reductions are outweighed by the negative NPV of consumer benefits, the economic burden on some consumers, and the significant burden on the industry, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 6 is not economically justified.

DOE then considered TSL 5, which would save 0.91 quad of energy, an amount DOE considers significant. Under TSL 5, the NPV of consumer benefit would be $0.68 billion using a discount rate of 7-percent, and $2.08 billion using a discount rate of 3-percent.

The cumulative emissions reductions at TSL 5 are 46.6 Mt of CO_2, 37.0 thousand tons of SO_2, 62.5 thousand tons of NO_X, 0.12 ton of Hg, 232.0 thousand tons of CH_4, and 0.7 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 5 ranges from $301 million to $4,337 million for CO_2, from $67 million to $599 million for CH_4, and from $1.7 million to $19.9 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 5 is $35 million using a 7-percent discount rate and $95 million using a 3-percent discount rate.

At TSL 5, the average LCC impact is a savings of $7,849 for RP_FS_L_AC, $12,907 for RP_FS_L_WC, $1,885 for RP_VS_L_AC, and $3,918 for RP_VS_L_WC. The simple payback period is 3.4 years for RP_FS_L_AC, 3.5 years for RP_FS_L_WC, and 6.7 years for RP_VS_L_AC, and RP_VS_L_WC. The fraction of consumers experiencing a net LCC cost is 7-percent for RP_FS_L_AC and RP_FS_L_WC, 31-percent for RP_VS_L_AC, and 32-percent for RP_VS_L_WC.

At TSL 5, the projected change in INPV is a decrease of $326.6 million to $311.3 million. This corresponds to a net loss of 79.7-percent to 76.0-percent in INPV for manufacturers.

Based on this analysis, DOE concludes that at TSL 5, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions are outweighed by the economic burden on some consumers, and significant burden on the industry, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, DOE has concluded that TSL 5 is not economically justified.

DOE then considered TSL 4, which would save an estimated 0.61 quad of energy, an amount DOE considers significant. Under TSL 4, the NPV of consumer benefit would be $1.50 billion using a discount rate of 7-percent, and $0.51 billion using a discount rate of 3-percent.

The cumulative emissions reductions at TSL 4 are 31.4 Mt of CO_2, 25.0 thousand tons of SO_2, 42.1 thousand tons of NO_X, 0.08 ton of Hg, 156.5 thousand tons of CH_4, and 0.3 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 4 ranges from $203 million to $2,925 million for CO_2, from $45 million to $404 million for CH_4, and from $1.1 million to $13.4 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 4 is $24 million using a 7-percent discount rate and $64 million using a 3-percent discount rate.

At TSL 4, the average LCC impact is a savings of $7,192 for RP_FS_L_AC, $11,615 for RP_FS_L_WC, $2,130 for RP_VS_L_AC, and $4,496 for RP_VS_L_WC. The simple payback period is 3.1 years for RP_FS_L_AC, 3.2 for RP_FS_L_WC, 6.0 years for RP_VS_L_AC, and RP_VS_L_WC. The fraction of consumers experiencing a net LCC cost is 4-percent for RP_FS_L_AC, 5-percent for RP_FS_L_WC, 23 percent for RP_VS_L_AC, and 25 percent for RP_VS_L_WC.

[117] For the definition of each product class code, see Table I.2.

At TSL 4, the projected change in INPV ranges from a decrease of $273.1 million to 260.5 million. This correspond to a net loss in INPV of 66.7-percent to 63.6-percent for manufacturers.

The Secretary concludes that at TSL 4 for compressors, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions are outweighed by the economic burden on some consumers, and the impacts on manufacturers, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 4 is not economically justified.

DOE then considered TSL 3, which would save an estimated 0.45 quads of energy, an amount DOE considers significant. Under TSL 3, the NPV of consumer benefit would be $1.15 billion using a discount rate of 7-percent, and $0.40 billion using a discount rate of 3-percent.

The cumulative emissions reductions at TSL 3 are 23.1 Mt of CO_2, 18.4 thousand tons of SO_2, 31.0 thousand tons of NO_X, 0.06 ton of Hg, 115.2 thousand tons of CH_4, and 0.3 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 3 ranges from $149 million to $2, 153 million for CO_2, from $33 million to $298 million for CH_4, and from $0.8 million to $9.9 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 4 is $17 million using a 7-percent discount rate and $47 million using a 3-percent discount rate.

At TSL 3, the average LCC impact is a savings of $7,377 for RP_FS_L_AC, $14,398 for RP_FS_L_WC, $2,248 for RP_VS_L_AC, and $6,118 for RP_VS_L_WC. The simple payback period is 2.9 years for RP_FS_L_AC, 3.1 for RP_FS_L_WC, 5.6 years for RP_VS_L_AC, and 5.7 years for RP_VS_L_WC. The fraction of consumers experiencing a net LCC cost is 3-percent for RP_FS_L_AC, 2 percent for RP_FS_L_WC, 17-percent for RP_VS_L_AC, and 14-percent for RP_VS_L_WC.

At TSL 3, the projected change in INPV ranges from a decrease of $205.2 million to a decrease of $147.8 million. This corresponds to a net loss of INPV of 50.1-percent and 36.1-percent, respectively.

The Secretary concludes that at TSL 3 for compressors, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions are outweighed by the economic burden on some consumers, and the impacts on manufacturers, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. Consequently, the Secretary has concluded that TSL 3 is not economically justified.

DOE then considered TSL 2, which would save an estimated 0.16 quad of energy, an amount DOE considers significant. Under TSL 2, the NPV of consumer benefit would be $0.45 billion using a discount rate of 7-percent, and $0.16 billion using a discount rate of 3-percent.

The cumulative emissions reductions at TSL 2 are 8.2 Mt of CO_2, 6.5 thousand tons of SO_2, 11.0 thousand tons of NO_X, 0.02 tons of Hg, 40.8 thousand tons of CH_4, and 0.1 thousand tons of N_2O. The estimated monetary value of the GHG emissions reduction at TSL 2 ranges from $53 million to $762 million for CO_2, from $25 million to $220 million for CH_4, and from $0.3 million to $3.5 million for N_2O. The estimated monetary value of the NO_X emissions reduction at TSL 2 is $6 million using a 7-percent discount rate and $17 million using a 3-percent discount rate.

At TSL 2, the average LCC impact is a savings of $8,002 for RP_FS_L_AC, $10,559 for RP_FS_L_WC, $2,618 for RP_VS_L_AC, and $5,145 for RP_VS_L_WC. The simple payback period is 2.4 years for RP_FS_L_AC, 2.7 for RP_FS_L_WC, and 4.9 years for RP_VS_L_AC and RP_VS_L_WC. The fraction of consumers experiencing a net LCC cost is 1 percent for RP_FS_L_AC and RP_FS_L_WC, 6-percent for RP_VS_L_AC, and 8-percent for RP_VS_L_WC.

At TSL 2, the projected change in INPV ranges from a decrease of $55.1 million to a decrease of $42.0 million. This corresponds to a net loss of INPV of 13.5-percent and 10.2-percent, respectively.

After considering the analysis and weighing the benefits and burdens, the Secretary has concluded that at TSL 2 for compressors, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, the estimated monetary value of the emissions reductions, and positive average LCC savings outweigh the negative impacts on some consumers and on manufacturers, including the conversion costs that could result in a reduction in INPV for manufacturers. Accordingly, the Secretary has concluded that TSL 2 would offer the maximum improvement in efficiency that is technologically feasible and economically justified, and would result in the significant conservation of energy.

Therefore, based on the above considerations, DOE adopts the energy conservation standards for compressors at TSL 2. The new energy conservation standards for compressors, which are expressed as package isentropic efficiency, are shown in Table V.28.

TABLE V.28—ENERGY CONSERVATION STANDARDS FOR COMPRESSORS

Equipment class	Standard level (package isentropic efficiency)	η_{Regr} (package isentropic efficiency reference curve)	d (percentage loss reduction)
Rotary, lubricated, air-cooled, fixed-speed.	$\eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.00928 * \ln^2(.4719 * V_1) + 0.13911 * \ln(.4719 * V_1) + 0.27110$.	−15
Rotary, lubricated, air-cooled, variable-speed.	$\eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.01549 * \ln^2(.4719 * V_1) + 0.21573 * \ln(.4719 * V_1) + 0.00905$.	−10
Rotary, lubricated, liquid-cooled, fixed-speed.	$.02349 + \eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.00928 * \ln^2(.4719 * V_1) + 0.13911 * \ln(.4719 * V_1) + 0.27110$.	−15
Rotary, lubricated, liquid-cooled, variable-speed.	$.02349 + \eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.01549 * \ln^2(.4719 * V_1) + 0.21573 * \ln(.4719 * V_1) + 0.00905$.	−15

2. Annualized Benefits and Costs of the Adopted Standards

The benefits and costs of the adopted standards can also be expressed in terms of annualized values. The annualized net benefit is (1) the annualized national economic value (expressed in 2015$) of the benefits from operating products that meet the adopted standards (consisting primarily of operating cost savings from using less energy), minus increases in product purchase costs, plus (2) the annualized monetary value of the benefits of GHG and NO_X emission reductions.

Table V.29 shows the annualized values for compressors under TSL 2, expressed in 2015$. The results under the primary estimate are as follows.

Using a 7-percent discount rate for benefits and costs other than GHG reduction (for which DOE used average social costs with a 3-percent discount rate),[118] the estimated cost of the standards in this rule is $9.9 million per year in increased equipment costs, while the estimated annual benefits are $28.1 million in reduced equipment operating costs, $17.2 million in GHG reductions, and $0.7 million in reduced NO_X emissions. In this case, the net benefit amounts to $36 million per year. Using a 3-percent discount rate for all benefits and costs, the estimated cost of the standards is $10.4 million per year in increased equipment costs, while the estimated annual benefits are $36.8 million in reduced operating costs, $17.2 million in GHG reductions, and $1.0 million in reduced NO_X emissions. In this case, the net benefit amounts to $45 million per year.

TABLE V.29—ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS FOR COMPRESSORS *

	Discount rate (percent)	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
		million 2015$/year		
Benefits				
Consumer Operating Cost Savings	7	28.1	24.8	35.1.
	3	36.8	32.2	46.6.
GHG Reduction (using avg. social costs at 5% discount rate) **	5	5.4	4.7	6.6.
GHG Reduction (using avg. social costs at 3% discount rate) **	3	17.2	14.8	21.2.
GHG Reduction (using avg. social costs at 2.5% discount rate) **	2.5	24.8	21.4	30.6.
GHG Reduction (using 95th percentile social costs at 3% discount rate) **	3	51.5	44.4	63.4.
NO_X Reduction †	7	0.7	0.6	1.9.
	3	1.0	0.9	2.8.
Total Benefits ‡	7 plus CO_2 range	34 to 80	30 to 70	44 to 100.
	7	46	40	58.
	3 plus CO_2 range	43 to 89	38 to 77	56 to 113.
	3	55	48	71.
Costs				
Consumer Incremental Equipment Costs ‡	7	9.9	8.8	11.4.
	3	10.4	9.3	12.0.
Net Benefits				
Total ††	7 plus CO_2 range	24 to 70	21 to 61	32 to 89.
	7	36	31	47.
	3 plus CO_2 range	33 to 79	28 to 68	44 to 101.
	3	45	39	59.

* This table presents the annualized costs and benefits associated with the considered compressors shipped in 2022–2051. These results include benefits to consumers which accrue after 2051 from the compressors purchased from 2022–2051. The incremental installed costs include incremental equipment cost as well as installation costs. The results account for the incremental variable and fixed costs incurred by manufacturers due to the adopted standards, some of which may be incurred in preparation for the rule. The GHG reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy prices from the *AEO 2016* Economic Growth cases. In addition, incremental product costs reflect constant prices in the Primary Estimate, a low decline rate in the Low Benefits Estimate, and a high decline rate in the High Benefits Estimate. The methods used to derive projected price trends are explained in section IV.F. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

** The interagency group selected four sets of SC-CO_2 SC-CH_4, and SC-N_2O values for use in regulatory analyses. Three sets of values are based on the average social costs from the integrated assessment models, at discount rates of 5-percent, 3-percent, and 2.5-percent. The fourth set, which represents the 95th percentile of the social cost distributions calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from climate change further out in the tails of the social cost distributions. The social cost values are emission year specific. The GHG reduction benefits are global benefits due to actions that occur nationally. See section IV.L for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.3 for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality used by EPA. For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the American Cancer Society (''ACS'') study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average social costs with 3-percent discount rate. In the rows labeled ''7% plus GHG range'' and ''3% plus GHG range,'' the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of social cost values.

†† The incremental installed costs include incremental equipment cost as well as installation costs. The results account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standards, some of which may be incurred in preparation for the rule.

VI. Certification Requirements

In the energy conservation standards NOPR, DOE proposed to adopt reporting requirements in a new § 429.63(b) within subpart B of 10 CFR part 429. Consistent with other types of covered products and equipment, the proposed section (10 CFR 429.63(b)) would specify that the general certification reporting requirements contained in 10 CFR 429.12 apply to compressors. The additional requirements proposed in 10 CFR 429.63 would require manufacturers to include the following

[118] DOE used average social costs with a 3-percent discount rate because these values are considered as the ''central'' estimates by the interagency group.

data (to be made public) in the certification reports:

- Full-load package isentropic efficiency or part-load package isentropic efficiency, as applicable (dimensionless);
- full-load actual volume flow rate (in cubic feet per minute);
- compressor motor nominal horsepower (in horsepower);
- full-load operating pressure (in pounds per square inch, gauge);
- maximum full-flow operating pressure (in pounds per square inch, gauge); and
- pressure ratio (dimensionless). 81 FR 31680, 31757–31758 (May 19, 2016).

The Code of Federal Regulations, under 10 CFR 429.12(b), already requires reporting of manufacturer name, model number(s), and equipment class for all covered products and equipment.

With respect to reporting model number(s), in the NOPR DOE proposed that a certification report must include a basic model number and the manufacturer's (individual) model number(s). DOE went on to explain that a manufacturer's model number (individual model number) is the identifier used by a manufacturer to uniquely identify what is commonly considered a ''model'' in industry—all units of a particular design. The manufacturer's (individual) model number typically appears on the product nameplate, in product catalogs and in other product advertising literature. In contrast, the basic model number is a number used by the manufacturer to indicate to DOE how the manufacturer has grouped its individual models for the purposes of testing and rating. Many manufacturers choose to use a model number that is similar to the individual model numbers in the basic model, but that is not required. The manufacturer's individual model number(s) in each basic model must reference not only the bare compressor, but also any motor and controls with which the compressor is being rated. 81 FR 31680, 31758 (May 19, 2016).

DOE received no comments in response to its proposal for certification requirements. However, requirements in the test procedure final rule regarding compressor configuration during testing necessitate the addition of two certification requirements to this final rule.

The test procedure final rule included two lists of ancillary equipment. The first list, presented in Table IV.2, contains ancillary equipment that must be included on a compressor package during testing, regardless of whether that ancillary equipment is distributed in commerce with the basic model under test. The second list, presented in Table IV.3, contains ancillary equipment that is required to be included for testing only if the ancillary equipment is distributed in commerce with the basic model under test. The test procedure final rule requires that if a compressor is distributed in commerce without an item from Table IV.2, the compressor's manufacturer must provide an appropriate item to be installed for compliance testing. Additionally, the test procedure specifies that ancillary equipment (other than that listed in Table IV.2 and Table IV.3) may be installed for the test if it is distributed in commerce with the compressor, but this additional ancillary equipment is not required.

To support these testing provisions, in this final rule, DOE is requiring manufacturers to report information regarding any pieces of ancillary equipment that manufacturers install for testing,[119] but that are not part of the compressor package, as distributed in commerce. The reporting of this information will allow DOE to replicate, for any possible compliance and enforcement testing, the testing configuration used by manufacturers during their certification testing. DOE believes this to be important, as the specified additional ancillary equipment installed for test may significantly affect the energy consumption of the tested unit.

As a result, the total of data required to be included in the certification reports is now as follows:

- Full-load package isentropic efficiency or part-load package isentropic efficiency, as applicable (dimensionless)
- full-load actual volume flow rate (in cubic feet per minute)
- compressor motor nominal horsepower (in horsepower)
- full-load operating pressure (in pounds per square inch, gauge)
- maximum full-flow operating pressure (in pounds per square inch, gauge)
- pressure ratio at full-load operating pressure (dimensionless)
- For any ancillary equipment that is installed for testing, but that is not part of the compressor package, as distributed in commerce (per the requirements of 10 CFR part 431, subpart T, appendix A, section I(B)(4)), the following must be reported:
  - A general description of the ancillary equipment, based on the list provided in the first column of Table 1 of 10 CFR part 431, subpart T, appendix A, section I(B)(4)
  - The manufacturer of the ancillary equipment
  - The brand of the ancillary equipment (if different from the manufacturer)
  - The model number of the ancillary equipment
  - The serial number of the ancillary equipment (if applicable)
  - The following electrical characteristics, if applicable:
    - Input Voltage
    - Number of Phases
    - Input Frequency
  - The following mechanical characteristics, if applicable:
    - Size of any connections
    - Type of any connections
  - Installation instructions for the ancillary equipment, accompanied by photos that clearly illustrate the ancillary equipment, as installed on compresssor package. Instructions and photo(s) to be provided in portable document format (*i.e.,* a PDF file).

[119] *I.e.,* in order to comply with the requirement that a tested compressor package include all ancillary equipment listed in Table IV.2.

VII. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Section 1(b)(1) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), requires each agency to identify the problem that it intends to address, including, where applicable, the failures of private markets or public institutions that warrant new agency action, as well as to assess the significance of that problem. The problems that the adopted standards for compressors are intended to address are as follows:

(1) Insufficient information and the high costs of gathering and analyzing relevant information leads some consumers to miss opportunities to make cost-effective investments in energy efficiency.

(2) In some cases, the benefits of more efficient equipment are not realized due to misaligned incentives between purchasers and users. An example of such a case occurs when a building contractor or building owner makes the purchasing decision but does not pay the energy costs.

(3) There are external benefits resulting from improved energy efficiency of products or equipment that are not captured by the users of such equipment. These benefits include externalities related to public health,

environmental protection and national energy security that are not reflected in energy prices, such as reduced emissions of air pollutants and greenhouse gases that impact human health and global warming. DOE attempts to qualify some of the external benefits through use of social cost of carbon values.

The Administrator of the Office of Information and Regulatory Affairs (''OIRA'') in the OMB has determined that the regulatory action in this document is not a significant regulatory action under section (3)(f) of Executive Order 12866. Section 6(a)(3)(A) of the Executive Order states that absent a material change in the development of the planned regulatory action, regulatory action not designated as significant will not be subject to review under section 6(a)(3) unless, within 10 working days of receipt of DOE's list of planned regulatory actions, the Administrator of OIRA notifies the agency that OIRA has determined that a planned regulation is a significant regulatory action within the meaning of the Executive order. Accordingly, DOE has not submitted this final rule for review by OIRA. Accordingly, pursuant to section 6(a)(3)(B) of the Order, DOE has provided to OIRA: (i) The text of the draft regulatory action, together with a reasonably detailed description of the need for the regulatory action and an explanation of how the regulatory action will meet that need; and (ii) an assessment of the potential costs and benefits of the regulatory action, including an explanation of the manner in which the regulatory action is consistent with a statutory mandate. DOE has included these documents in the rulemaking record.

DOE has also reviewed this regulation pursuant to Executive Order 13563, issued on January 18, 2011. 76 FR 3281 (Jan. 21, 2011). E.O. 13563 is supplemental to and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in Executive Order 12866. To the extent permitted by law, agencies are required by Executive Order 13563 to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

DOE emphasizes as well that Executive Order 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, DOE believes that this final rule is consistent with these principles, including the requirement that, to the extent permitted by law, benefits justify costs and that net benefits are maximized.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*) requires preparation of an initial regulatory flexibility analysis (''IRFA'') and a final regulatory flexibility analysis (''FRFA'') for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (Aug. 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website (*http://energy.gov/gc/office-general-counsel*). DOE has prepared the following FRFA for the products that are the subject of this rulemaking.

For manufacturers of compressors, the SBA has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. (See 13 CFR part 121.) The size standards are listed by the North American Industry Classification System (NAICS) code and industry description and are available at *www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf.* Manufacturing of compressors is classified under NAICS 333912, ''Air and Gas Compressor Manufacturing.'' The SBA sets a threshold of 1,000 employees or fewer for an entity to be considered as a small business for this category.

1. Need for, Objectives of, and Legal Basis, for Rule

As described in section II.A above, Title III of the Energy Policy and Conservation Act of 1975 (''EPCA'' or ''the Act'') sets forth a variety of provisions designed to improve energy efficiency. (42 U.S.C. 6291, *et seq.*) Part C of Title III, which for editorial reasons was re-designated as Part A–1 upon incorporation into the U.S. Code (42 U.S.C. 6311–6317), establishes the ''Energy Conservation Program for Certain Industrial Equipment.'' EPCA provides that DOE may include a type of industrial equipment, including compressors, as covered equipment if it determines that to do so is necessary to carry out the purposes of Part A–1. (42 U.S. 6311(2)(B)(i) and 42 U.S.C. 6312(b)). The purpose of Part A–1 is to improve the efficiency of electric motors and pumps and certain other industrial equipment in order to conserve the energy resources of the Nation. (42 U.S.C 6312(a)). DOE determined that compressors meet the statutory criteria for classifying industrial equipment as covered, as Compressors are a type of industrial equipment (1) which in operation consumes, or is designed to consume, energy; (2) are to a significant extent distributed in commerce for industrial or commercial use; and (3) are not covered under 42 U.S.C. 6291(a)(2).

2. Significant Issues Raised in Response to the IRFA

Many manufacturers stated that small businesses would be negatively affected by the proposed regulation compared to their larger multinational counterparts. Sullivan-Palatek stated it is difficult for their small business, and other small businesses, to access capital compared to their larger competitors. (Sullivan-Palatek, Public Meeting Transcript No. 44 at p. 141–143) A few manufacturers also noted that a stringent standard can cause a heavy cost burden that will likely cause many small businesses to exit the rotary compressor business or become acquired by larger companies. (Sullivan-Palatek, No. 51 at p. 2–9;

Castair, No. 52 at p. 3; Compressed Air Systems, No. 61 at p. 4) Often times, these small businesses, both manufacturers and packagers, employ specialized workers that may not be able to find a new job where they can use their skills. (Sullivan-Palatek, No. 51 at p. 9; Castair, No. 45 at p. 1; CAGI, No. 52 at p. 3)

Further, Compressed Air Systems noted that testing four to five units based on the NOPR test procedure could cost up to $125,000 for a manufacturer. Most domestic small air compressor manufacturers produce small quantities of each model offered, which is a heavy cost burden to smaller companies with limited access to capital. (Compressed Air Systems, No. 61 at p. 4)

Consistent with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*), as amended, the Department analyzes the expected impacts of an energy conservation standard on small business compressor manufacturers directly regulated by DOE's standards. DOE understands that some small manufacturers may be disproportionately affected by an energy conservation standard, and these impacts are discussed in detail in section VII.B.4. DOE agrees that small businesses may not have the same access to capital compared to their larger competitors. Furthermore, DOE analyzes the impacts of a compressors energy conservation standard on domestic direct employment in section V.B.2.b. Further, DOE acknowledges the commenter's concerns about the scope of the test procedure as defined in the test procedure NOPR, which included many low-shipment volume or custom compressor models. DOE took two key steps to address commenters' concerns and reduce the burden of testing, especially for low-volume equipment, in the test procedure final rule: (1) DOE is significantly limiting the scope of the test procedure final rule, as compared to the scope proposed in the test procedure NOPR, and (2) DOE adopted provisions allowing the use of an AEDM, in lieu of testing.

Additionally, Sullivan-Palatek recalls that in the NOPR, DOE identified two small business OEMs and 13 large OEMs. Sullivan-Palatek also stated that DOE's NOPR analysis concluded that, on average, small businesses will incur $3.95 million to $5.15 million in conversion costs per company. Meanwhile, large businesses will incur, on average, $6.02 million to $7.85 million in conversion costs per company. Sullivan-Palatek questioned why DOE assumes a smaller firm, such as their own, with the same number of models requiring conversion will incur a lesser cost than a large business. As such, they requested an independent analysis by the Department of Justice. (Sullivan-Palatek, No. 51 at p. 8–9)

DOE understands that small manufacturers will have varying degrees of burden when complying with a compressors energy conservation standard. Depending on the number of models offered and equipment efficiency offerings, small manufacturers may find that their conversion costs either fall above or below the small business average. Typically, larger manufacturers have broader equipment offerings than their smaller competitors, which means they are likely to incur higher redesign costs to bring more products into compliance. However, DOE notes that one small business OEM had a higher percentage of failing models at TSL 2. This small business OEM may incur disproportionate impacts relative to the industry because their percentage of failing models is above the industry average.

During the notice of proposed rulemaking public meeting, DOE cautioned stakeholders that SBA size standards may shift before the final rule is published. Sullair and CAGI commented that with an increased size standard, from 500 employees to 1,000 employees, the number of OEMs identified would increase as well. (CAGI, Public Meeting Transcript No. 44 at p. 141; Sullair, Public Meeting Transcript No. 44 at p. 140)

For the compressor manufacturing industry, the Small Business Administration (SBA) sets size threshold, which defines those entities classified as small businesses for the purpose of this statue. Compressor manufacturers are classified under NAICS 333912, ''Air and Gas Compressor Manufacturing.'' During the NOPR stage, the SBA set a threshold of 500 employees or less for an entity to be considered as a small business in this industry. In February 2016, as codified in 13 CFR part 121, the SBA changed size standards for NAICS code 333912 to 1,000 employees or less. Therefore, for the purpose of this final rule, DOE has identified 22 small manufacturers that meet the employee threshold defined by the SBA. The manufacturer impact analysis and regulatory flexibility analysis have been updated in the final rule to reflect the changes in SBA size standards.

Manufacturers stated that there are between 10–100 more small businesses affected by this rulemaking that were not previously identified by DOE during the NOPR stage. With a number of small businesses unidentified, many were not notified or contacted for feedback prior to the regulation. Further, Jenny Products and Compressed Air Systems commented that the high cost to comply with the test procedure and standard would place a significant burden on small manufacturers. (Sullivan-Palatek, No. 51 at p. 1–2; Jenny Products, No. 58 at p. 4–5; Compressed Air Systems, No. 61 at p. 2–4; Castair, No. 45 at p. 2) In a written comment, Compressed Air Systems provided a list of sixteen potential small businesses that could be affected by this final rule standard. It also noted that while DOE's analysis shows that most units manufactured by small businesses can comply with this final rule, small businesses will still face high burdens testing each model. (Compressed Air Systems, No. 61 at p. 2–5) However, Jenny Products confirmed that their company will not be able to comply with this final rule standard. (Jenny Products, No. 58 at p. 6) As a result, Compressed Air Systems asked that DOE conduct a more thorough survey of domestic small businesses to understand how a stringent standard will lessen their ability to remain competitive in the market. (Compressed Air Systems, No. 61 at p. 2–5)

DOE recognizes that small manufacturers may be substantially impacted by energy conservation standards. Again, DOE notes in the Regulatory Flexibility Act, section VI.B of this final rule, that small manufacturers are not expected to face significantly higher conversion costs than their larger competitors. In response to the list of manufacturers provided by Compressed Air Systems, DOE reviewed this list and identified two additional entities that produce covered equipment. Of these two entities, one was a large manufacturer and the other was a domestic small business that packages and assembles covered equipment. DOE has updated its manufacturer count and analyses to reflect these additions.

3. Description on Estimated Number of Small Entities Affected

For manufacturers of compressors, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. (See 13 CFR part 121.) The size standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at *www.sba.gov/sites/default/*

files/files/Size_Standards_Table.pdf. Manufacturing of compressors is classified under NAICS 333912, ''Air and Gas Compressor Manufacturing.'' The SBA sets a threshold of 1,000 employees or fewer for an entity to be considered as a small business for this category.

To identify and estimate the number of small business manufacturers of equipment within the scope of this rulemaking, DOE conducted a market survey using available public information. DOE's research involved industry trade association membership directories (including CAGI), individual company and online retailer websites, and market research tools (*e.g.,* Hoovers reports) to create a list of companies that manufacture equipment covered by this rulemaking. DOE presented its list to manufacturers in MIA interviews and asked industry representatives if they were aware of any other small manufacturers during manufacturer interviews and at DOE public meetings. DOE reviewed publicly-available data and contacted select companies on its list, as necessary, to determine whether they met the SBA's definition of a small business manufacturer. DOE screened out companies that do not offer equipment within the scope of this rulemaking, do not meet the definition of a ''small business,'' or are foreign-owned and operated.

DOE identified 22 manufacturers of lubricated rotary compressor equipment sold in the United States and within the scope of this rulemaking. Seven of these manufacturers were under the 1,000-employee threshold defined by the SBA to qualify as a small business and are domestic companies.

Within the compressor industry, manufacturers are classified into two categories; original equipment manufacturers (''OEMs'') and compressor packagers. OEMs manufacture their own air-ends and assemble them with other components to create complete package compressors. Packagers assemble motors and other accessories with air-ends purchased from other companies, resulting in a complete compressor.

Within the rotary air compressor industry, DOE identified 22 manufacturers; 15 are OEMs and seven are packagers of compressors. Of the 22 total manufacturers, seven large OEMs supply approximately 80 percent of shipments and revenues. Of the seven domestic small businesses identified, DOE's research indicates that two are OEMs and five are packagers.

4. Description and Estimate of Compliance Requirements Including Differences in Cost, if Any, for Different Groups of Small Entities

Because DOE proposes to establish standards for only lubricated rotary equipment, this section will only focus on the estimated impacts to the seven domestic small manufacturers of rotary compressors.

Of the seven domestic small rotary compressor manufacturers identified, DOE's research indicates that two are OEMs and five are packagers. Whereas OEMs would be expected to incur significant redesign and capital conversion costs in order to comply with new standards, packagers would not. Unlike OEMs, packagers would not face significant capital conversion costs, as the processes they use to assemble completed packages from purchased air-ends and components is not expected to change. Packagers are also not expected to face significant product redesign costs, as the burden of engineering and redesigning the air-end and other key components would reside with OEMs. However, as manufacturers OEMs and packagers are both expected to incur new compliance and testing costs, as any new energy conservation standard would require their equipment to be tested and certified to the standard, using a DOE test procedure.

As a result of these efforts, the following discussion of domestic small business impacts considers capital, redesign, and compliance cost impacts facing rotary OEMs, while only considering redesign and compliance cost impacts for rotary packagers.

DOE identified two small business OEMs producing lubricated rotary compressors. Based on equipment listings data in the CAGI database, small business OEMs comprise approximately three percent of industry listings. Excluding testing costs, DOE estimates that the average failing compressor model will cost between $0.29 million and $0.38 million in product and capital conversion costs. Using the CAGI database and manufacturer websites, DOE identified 23 failing models manufactured by small business OEMs. Therefore, DOE estimates that product and capital conversion costs, excluding testing costs, for small businesses to range from $6.6 million to $8.7 million. DOE notes that 21 of the 23 failing models are manufactured by one small business OEM. This small business OEM may incur disproportionate impacts relative to the industry because their percentage of failing models is above the industry average.

DOE identified five small business packagers producing lubricated rotary compressors. DOE estimates that the average packager will incur between $1.5 million and $2.2 million in engineering redesign costs at TSL 2. DOE was unable to obtain equipment performance data for packagers. During the NOPR stage, DOE estimated the total number of rotary models in the industry by scaling the model counts in the CAGI database by CAGI's estimated market share; 85 percent. In the final rule analysis, DOE updated the CAGI database with additional manufacturers and models. The CAGI database model count increased by approximately five percent and therefore, for the purposes of the final rule analysis, DOE estimates that packagers represent approximately 10 percent of industry models. Therefore, DOE calculated the industry testing cost to packagers at approximately $2.3 million. Further, using publicly available information, DOE calculated the average annual revenue of a small business packager at $14.5 million. With a conversion period of five years, 2017 to 2021, the average small business packager would have to commit between 2.5 percent and 3.5 percent of their conversion period revenue to cover the estimated engineering redesign and testing costs at TSL 2.

DOE's conversion cost estimates were derived from total industry conversion costs discussed previously in section IV.J.2.c of this document. DOE notes that the ranges shown here relate to the two conversion cost scenarios investigated in section IV.J.2.c of this document.

However, as noted in section V.B.2, the GRIM free cash flow results in 2021 indicated that some manufacturers may need to access the capital markets in order to fund conversion costs directly related to the proposed standard. Given that small manufacturers may have greater difficulty securing outside capital [120] and that the necessary conversion costs are not insignificant to the size of a small business, it is possible the domestic small OEMs may be forced to retire a greater portion of product models than large competitors. In addition, smaller companies often have a higher cost of borrowing due to higher risk on the part of investors, largely attributed to lower cash flows and lower per unit profitability. In these cases, small manufacturers may observe

[120] Simon, Ruth, and Angus Loten, ''Small-Business Lending Is Slow to Recover,'' *Wall Street Journal,* August 14, 2014. Accessed August 2014, available at *http://online.wsj.com/articles/small-business-lending-is-slow-to-recover-1408329562.*

higher costs of debt than larger manufacturers.

5. Significant Alternatives to the Rule

The discussion in the previous section analyzes impacts on small businesses that would result from the adopted standards, represented by TSL 2. In reviewing alternatives to the adopted standards, DOE examined energy conservation standards set at lower efficiency levels. While TSL 1 would reduce the impacts on small business manufacturers, it would come at the expense of a reduction in energy savings. TSL 1 achieves 81 percent less energy savings compared to the energy savings at TSL 2.

DOE believes that establishing standards at TSL 2 balances the benefits of the energy savings at TSL 2 with the potential burdens placed on compressors manufacturers, including small business manufacturers. Accordingly, DOE is not adopting one of the other TSLs considered in the analysis, or the other policy alternatives examined as part of the regulatory impact analysis and included in chapter 17 of the final rule TSD.

Additional compliance flexibilities may be available through other means. EPCA provides that a manufacturer whose annual gross revenue from all of its operations does not exceed $8 million may apply for an exemption from all or part of an energy conservation standard for a period not longer than 24 months after the effective date of a final rule establishing the standard. Additionally, section 504 of the Department of Energy Organization Act, 42 U.S.C. 7194, provides authority for the Secretary to adjust a rule issued under EPCA in order to prevent special hardship, inequity, or unfair distribution of burdens'' that may be imposed on that manufacturer as a result of such rule. Manufacturers should refer to 10 CFR part 430, subpart E, and 10 CFR part 1003 for additional details.

C. Review Under the Paperwork Reduction Act

Manufacturers of compressors must certify to DOE that their products comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their products according to the DOE test procedures for compressors, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including compressors. 76 FR 12422 (March 7, 2011); 80 FR 5099 (Jan. 30, 2015) The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (''PRA''). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 30 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

Pursuant to the National Environmental Policy Act (''NEPA'') of 1969, DOE has determined that the rule fits within the category of actions included in Categorical Exclusion (''CX'') B5.1 and otherwise meets the requirements for application of a CX. (See 10 CFR part 1021, App. B, B5.1(b); 10 CFR 1021.410(b) and App. B, B(1)–(5).) The rule fits within this category of actions because it is a rulemaking that establishes energy conservation standards for consumer products or industrial equipment, and for which none of the exceptions identified in CX B5.1(b) apply. DOE has applied Categorical Exclusion B5.1—Actions to conserve energy or water, as the final determination for this rulemaking and, therefore, DOE does not need to prepare an Environmental Assessment or Environmental Impact Statement for this rule. DOE's CX determination for this rule is available at *http://energy.gov/nepa/categorical-exclusion-cx-determinations-cx.*

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (Aug. 10, 1999) imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) Therefore, no further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. 61 FR 4729 (Feb. 7, 1996). Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (''UMRA'') requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at *http://energy.gov/sites/prod/files/gcprod/documents/umra_97.pdf.*

This rule does not contain a Federal intergovernmental mandate, nor is it expected to require expenditures of $100 million or more in any one year by the private sector. As a result, the analytical requirements of UMRA do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

Pursuant to Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 18, 1988), DOE has determined that this rule would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under information quality guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA at OMB, a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgates or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy, or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

DOE has concluded that this regulatory action, which sets forth new energy conservation standards for compressors, is not a significant energy action because the standards are not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on this final rule.

L. Review Under the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (''OSTP''), issued its Final Information Quality Bulletin for Peer Review (''the Bulletin''). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are ''influential scientific information,'' which the Bulletin defines as ''scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions.'' Id at 70 FR 2667.

In response to OMB's Bulletin, DOE conducted formal in-progress peer reviews of the energy conservation standards development process and analyses and has prepared a Peer Review Report pertaining to the energy conservation standards rulemaking analyses. Generation of this report involved a rigorous, formal, and documented evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects. The ''Energy Conservation Standards Rulemaking Peer Review Report'' dated February 2007 has been disseminated and is available at the following website: *www.energy.gov/eere/buildings/peer-review.*

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule prior to its effective date. The report will state that it has been determined that the rule is a ''major rule'' as defined by 5 U.S.C. 804(2).

VIII. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects

10 CFR Part 429

Confidential business information, Energy conservation, Household appliances, Imports, Reporting and recordkeeping requirements.

10 CFR Part 431

Administrative practice and procedure, Confidential business

information, Energy conservation, Household appliances, Imports, Incorporation by reference, Intergovernmental relations, Small businesses.

Issued in Washington, DC, on December 5, 2016.

David J. Friedman,

Acting Assistant Secretary, Energy Efficiency and Renewable Energy.

Note: DOE is publishing this document concerning industrial air compressors to comply with an order from the U.S. District Court for the Northern District of California in the consolidated cases of *Natural Resources Defense Council, et al.* v. *Perry and People of the State of California et al.* v. *Perry,* Case No. 17–cv–03404–VC, as affirmed by the U.S. Court of Appeals for the Ninth Circuit in the consolidated cases Nos. 18–15380 and 18–15475. DOE reaffirmed the original signature and date in the Energy Conservation Standards implementation of the court order published elsewhere in this issue of the **Federal Register**. This document is substantively identical to the signed document DOE had previously posted to its website but has been edited and formatted in conformance with the publication requirements for the **Federal Register** and CFR to ensure the document can be given legal effect.

Editorial Note: This document was received for publication by the Office of the Federal Register on December 3, 2019.

For the reasons set forth in the preamble, DOE amends parts 429 and 431 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 1. The authority citation for part 429 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 2. Section 429.12 is amended by revising paragraph (b)(13) to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(b) * * *

(13) Product specific information listed in §§ 429.14 through 429.63 of this chapter.

* * * * *

■ 3. Section 429.63 is amended by adding paragraph (b) to read as follows:

§ 429.63 Compressors.

* * * * *

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to compressors; and

(2) Pursuant to § 429.12(b)(13), a certification report will include the following public product-specific information:

(i) Full-load package isentropic efficiency or part-load package isentropic efficiency, as applicable (dimensionless).

(ii) Full-load actual volume flow rate (in cubic feet per minute).

(iii) Compressor motor nominal horsepower (in horsepower).

(iv) Full-load operating pressure (in pounds per square inch, gauge).

(v) Maximum full-flow operating pressure (in pounds per square inch, gauge).

(vi) Pressure ratio at full-load operating pressure (dimensionless).

(vii) For any ancillary equipment that is installed for test, but is not part of the compressor package as distributed in commerce (per the requirements of 10 CFR part 431, subpart T, appendix A, section I(B)(4)), the following must be reported:

(A) A general description of the ancillary equipment, based on the list provided in the first column of Table 1 of 10 CFR part 431, subpart T, appendix A, section I(B)(4).

(B) The manufacturer of the ancillary equipment.

(C) The brand of the ancillary equipment (if different from the manufacturer).

(D) The model number of the ancillary equipment.

(E) The serial number of the ancillary equipment (if applicable).

(F) The following electrical characteristics, if applicable:

(*1*) Input Voltage.

(*2*) Number of Phases.

(*3*) Input Frequency.

(G) The following mechanical characteristics, if applicable:

(*1*) Size of any connections.

(*2*) Type of any connections.

(H) Installation instructions for the ancillary equipment, accompanied by photos that clearly illustrate the ancillary equipment, as installed on compresssor package. Instructions and photo(s) to be provided in portable document format (*i.e.,* a PDF file).

■ 4. Section 429.71 is amended by adding paragraph (e) to read as follows:

§ 429.71 Maintenance of records.

* * * * *

(e) When considering if a compressor is subject to energy conservation standards under part 431, DOE may need to determine if a compressors was designed and tested to the requirements set forth in the American Petroleum Institute standard 619, ''Rotary-Type Positive-Displacement Compressors for Petroleum, Petrochemical, and Natural Gas Industries'' (API 619). In this case, DOE may request that a manufacturer provide DOE with copies of the original requirements and test data that were submitted to the purchaser of the compressor, in accordance with API 619.

PART 431—ENERGY CONSERVATION PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 5. The authority citation for part 431 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 6. Section 431.342 is amended by adding, in alphabetical order, definitions for ''Air-cooled compressor'', ''Liquid-cooled compressor'' and ''Water-injected lubricated compressor'' to read as follows:

§ 431.342 Definitions concerning compressors.

* * * * *

Air-cooled compressor means a compressor that utilizes air to cool both the compressed air and, if present, any auxiliary substance used to facilitate compression, and that is not a liquid-cooled compressor.

* * * * *

Liquid-cooled compressor means a compressor that utilizes liquid coolant provided by an external system to cool both the compressed air and, if present, any auxiliary substance used to facilitate compression.

* * * * *

Water-injected lubricated compressor means a lubricated compressor that uses injected water as an auxiliary substance.

■ 7. Section 431.345 is added to read as follows:

§ 431.345 Energy conservation standards and effective dates.

(a) Each compressor that is manufactured starting on January 10, 2025 and that:

(1) Is an air compressor,

(2) Is a rotary compressor,

(3) Is not a liquid ring compressor,

(4) Is driven by a brushless electric motor,

(5) Is a lubricated compressor,

(6) Has a full-load operating pressure greater than or equal to 75 pounds per square inch gauge (psig) and less than or equal to 200 psig,

(7) Is not designed and tested to the requirements of The American

Petroleum Institute standard 619, ''Rotary-Type Positive-Displacement Compressors for Petroleum, Petrochemical, and Natural Gas Industries,''

(8) Has full-load actual volume flow rate greater than or equal to 35 cubic feet per minute (cfm), or is distributed in commerce with a compressor motor nominal horsepower greater than or equal to 10 horsepower (hp),

(9) Has a full-load actual volume flow rate less than or equal to 1,250 cfm, or is distributed in commerce with a compressor motor nominal horsepower less than or equal to 200 hp,

(10) Is driven by a three-phase electric motor,

(11) Is manufactured alone or as a component of another piece of equipment; and

(12) Is in one of the equipment classes listed in the Table 1, must have a full-load package isentropic efficiency or part-load package isentropic efficiency that is not less than the appropriate ''Minimum Package Isentropic Efficiency'' value listed in Table 1 of this section.

TABLE 1—ENERGY CONSERVATION STANDARDS FOR CERTAIN COMPRESSORS

Equipment class	Minimum package isentropic efficiency	η_{Regr} (package isentropic efficiency reference curve)	d (percentage loss reduction)
Rotary, lubricated, air-cooled, fixed-speed compressor.	$\eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.00928 * \ln^2(.4719 * V_1) + 0.13911 * \ln(.4719 * V_1) + 0.27110$.	−15
Rotary, lubricated, air-cooled, variable-speed compressor.	$\eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.01549 * \ln^2(.4719 * V_1) + 0.21573 * \ln(.4719 * V_1) + 0.00905$.	−10
Rotary, lubricated, liquid-cooled, fixed-speed compressor.	$.02349 + \eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.00928 * \ln^2(.4719 * V_1) + 0.13911 * \ln(.4719 * V_1) + 0.27110$.	−15
Rotary, lubricated, liquid-cooled, variable-speed compressor.	$.02349 + \eta_{Regr} + (1 - \eta_{Regr}) * (d/100)$	$-0.01549 * \ln^2(.4719 * V_1) + 0.21573 * \ln(.4719 * V_1) + 0.00905$.	−15

(b) Instructions for the use of Table 1 of this section:

(1) To determine the standard level a compressor must meet, the correct equipment class must be identified. The descriptions are in the first column (''Equipment Class''); definitions for these descriptions are found in § 431.342.

(2) The second column (''Minimum Package Isentropic Efficiency'') contains the applicable energy conservation standard level, provided in terms of package isentropic efficiency.

(3) For ''Fixed-speed compressor'' equipment classes, the relevant Package Isentropic Efficiency is Full-load Package Isentropic Efficiency. For ''Variable-speed compressor'' equipment classes, the relevant Package Isentropic Efficiency is Part-load Package Isentropic Efficiency. Both Full- and Part-load Package Isentropic Efficiency are determined in accordance with the test procedure in § 431.344.

(4) The second column (''Minimum Package Isentropic Efficiency'') references the third column (''η_{Regr}''), also a function of full-load actual volume flow rate, and the fourth column (''d''). The equations are provided separately to maintain consistency with the language of the preamble and analysis.

(5) The second and third columns contain the term V_1, which denotes compressor full-load actual volume flow rate, given in terms of cubic feet per minute (''cfm'') and determined in accordance with the test procedure in § 431.344.

Note: The following letter will not appear in the Code of Federal Regulations.

U.S. Department of Justice, Antitrust Division.

Renata B. Hesse,

Acting Assistant Attorney General.

Main Justice Building, 950 Pennsylvania Avenue NW, Washington, DC 20530–0001, (202) 514–2401/(202) 616–2645 (Fax)

July 18, 2016

Anne Harkavy,
Deputy General Counsel for Litigation, Regulation and Enforcement, U.S. Department of Energy, Washington, DC 20585

Re: Energy Conservation Standards for Compressors; Doc. No. EERE–2013–BT–STD–0040

Dear Deputy General Counsel Harkavy:

I am responding to your May 19, 2016, letter seeking the views of the Attorney General about the potential impact on competition of proposed energy conservation standards for compressors. Your request was submitted under Section 325(o)(2)(B)(i)(V) of the Energy Policy and Conservation Act, as amended (ECPA), 42 U.S.C. 6295(o)(2)(B)(i)(V), which requires the Attorney General to make a determination of the impact of any lessening of competition that is likely to result from the imposition of proposed energy conservation standards. The Attorney General's responsibility for responding to requests from other departments about the effect of a program on competition has been delegated to the head of the Antitrust Division in 28 CFR 0.40(g).

In conducting its analysis, the Antitrust Division examines whether a proposed standard may lessen competition, for example, by substantially limiting consumer choice or increasing industry concentration. A lessening of competition could result in higher prices to manufacturers and consumers.

We have reviewed the proposed standards contained in the Notice of Proposed Rulemaking (81 FR 31680, May 19, 2016) and the related technical support documents. We have also reviewed supplementary information submitted to the Attorney General by the Department of Energy, as well as materials presented at the public meeting held on the proposed standards on June 20, 2016, and conducted interviews with industry members.

Based on the information currently available, we do not believe that the proposed energy conservation standards for compressors are likely to have a significant adverse impact on competition.

Sincerely,

Renata B. Hesse

[FR Doc. 2019–26355 Filed 1–9–20; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

10 CFR Part 431

[Docket Number EERE–2013–BT–STD–0030]

RIN 1904–AD01

Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy

conservation standards for various consumer equipment and certain commercial and industrial equipment, including commercial packaged boilers (CPBs). EPCA also requires the U.S. Department of Energy (DOE) to periodically review standards. In this final rule, DOE is adopting more-stringent energy conservation standards for certain commercial packaged boilers.

DATES: The effective date of this rule is March 10, 2020. Compliance with the amended standards established for commercial packaged boilers in this final rule is required on and after January 10, 2023.

ADDRESSES: The docket, which includes **Federal Register** notices, public, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at *www.regulations.gov/docket?D=EERE-2013-BT-STD-0030.* The docket web page contains simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 586–6636 or by email: *ApplianceStandardsQuestions@ee.doe.gov.*

FOR FURTHER INFORMATION CONTACT:

Mr. James Raba, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–8654. Email: *ApplianceStandardsQuestions@ee.doe.gov.*

Mr. Peter Cochran, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–9496. Email: *Peter.Cochran@hq.doe.gov.*

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I. Synopsis of the Final Rule

Title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C. 6291, *et seq;* ''EPCA''), Public Law 94–163, sets forth a variety of provisions designed to improve energy efficiency. Part C of Title III, which for editorial reasons was re-designated as Part A–1 upon incorporation into the U.S. Code (42 U.S.C. 6311–6317, as codified), establishes the ''Energy Conservation Program for Certain Industrial Equipment,'' which includes commercial packaged boilers (CPBs), the subject of this rulemaking.[1] (42 U.S.C. 6311(1)(J))

EPCA requires DOE to conduct an evaluation of its standards for CPB equipment every 6 years and to publish either a notice of determination that such standards do not need to be amended or a notice of proposed rulemaking (NOPR) including new proposed standards. (42 U.S.C. 6313(a)(6)(C)(i)) This final rule satisfies DOE's statutory obligation under 42 U.S.C. 6313(a)(6)(C).

In accordance with these and other statutory requirements discussed in this document, DOE is adopting amended energy conservation standards for commercial packaged boilers. DOE has examined the existing CPB standards and concludes that modifying and expanding the existing 10 CPB equipment classes to 12 equipment classes is warranted. As discussed in detail in section IV.A.3 of this document, DOE opted to: (1) Discontinue the use of draft type as a criterion for equipment classes; and (2) establish separate equipment classes for ''very large'' commercial packaged boilers. Eliminating the use of draft type as a distinguishing feature for equipment classes consolidated the 4 existing draft-specific equipment classes into 2 non-draft-specific equipment classes, while adding very large commercial packaged boilers as separate equipment classes resulted in an additional 4 equipment classes. As a result, the total number of equipment classes has increased from 10 to 12. DOE is adopting more stringent standards for 8 of the 12 equipment classes in this final rule, which includes all classes except for the newly adopted very large CPB classes. The amended standards, which prescribe minimum thermal efficiencies (E_T) or combustion efficiencies (E_C), as applicable, are shown in Table I.1. These amended standards apply to all equipment listed in Table I.1 and manufactured in, or imported into, the United States on and after the compliance dates in Table I.1.

TABLE I.1—ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PACKAGED BOILERS

Equipment	Size category (input)	Energy conservation standard *	Compliance date †
Small Gas-Fired Hot Water Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E_T	January 10, 2023.
Large Gas-Fired Hot Water Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	85.0% E_C	January 10, 2023.
Very Large Gas-Fired Hot Water Commercial Packaged Boilers	>10,000,000 Btu/h	82.0% E_C	March 2, 2012.
Small Oil-Fired Hot Water Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	87.0% E_T	January 10, 2023.
Large Oil-Fired Hot Water Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	88.0% E_C	January 10, 2023.
Very Large Oil-Fired Hot Water Commercial Packaged Boilers	>10,000,000 Btu/h	84.0% E_C	March 2, 2012.
Small Gas-Fired Steam Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	81.0% E_T	January 10, 2023.
Large Gas-Fired Steam Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	82.0% E_T	January 10, 2023.
Very Large Gas-Fired Steam Commercial Packaged Boilers **	>10,000,000 Btu/h	79.0% E_T	March 2, 2012.
Small Oil-Fired Steam Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E_T	January 10, 2023.
Large Oil-Fired Steam Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	85.0% E_T	January 10, 2023.
Very Large Oil-Fired Steam Commercial Packaged Boilers	>10,000,000 Btu/h	81.0% E_T	March 2, 2012.

* E_T means ''thermal efficiency.'' E_C means ''combustion efficiency.''
** Prior to March 2, 2022, for natural draft very large gas-fired steam commercial packaged boilers, a minimum thermal efficiency level of 77% is permitted and meets Federal commercial packaged boiler energy conservation standards.
† For very large CPB equipment classes DOE is not amending the existing standards, which had a compliance date of March 2, 2012, as shown.

A. Benefits and Costs to Consumers

Table I.2 summarizes DOE's evaluation of the economic impacts of the adopted energy conservation standards on consumers of commercial packaged boilers, as measured by the average life-cycle cost (LCC) savings and the simple payback period (PBP).[2] The average LCC savings are positive for all equipment classes, and the PBP is less than the average lifetime of the equipment, which is estimated to be 24.8 years for all equipment classes evaluated in this final rule.

[1] All references to EPCA in this document refer to the statute as amended through the Energy Efficiency Improvement Act of 2015, Public Law 114–11 (April 30, 2015).

[2] The average LCC savings refer to consumers that are affected by a standard and are measured relative to the no-new-standards case efficiency distribution, which depicts the CPB market in the compliance year in the absence of amended standard levels (see section IV.F.9 of this document and chapter 8 of the final rule technical support document (TSD)). The simple PBP, which is designed to compare specific efficiency levels for commercial packaged boilers, is measured relative to the baseline CPB equipment (see section IV.F.10 of this document and chapter 8 of the TSD).

TABLE I.2—IMPACTS OF ADOPTED ENERGY CONSERVATION STANDARDS ON CONSUMERS OF COMMERCIAL PACKAGED BOILERS

Equipment class	Average LCC savings (2015$)	Simple payback period (years)
Small Gas-Fired Hot Water	$212	10.1
Large Gas-Fired Hot Water	2,037	7.0
Small Oil-Fired Hot Water	14,421	4.1
Large Oil-Fired Hot Water	31,379	4.8
Small Gas-Fired Steam	1,002	10.1
Large Gas-fired Steam	11,188	4.2
Small Oil-fired Steam	5,839	4.0
Large Oil-Fired Steam	36,832	2.7

DOE's analysis of the impacts of the amended standards on consumers is described in section IV.F of this document and in chapter 8 of the final rule technical support document (TSD).

B. Impact on Manufacturers

The industry net present value (INPV) is the sum of the discounted cash flows to the industry from the reference year through the end of the analysis period (2016 to 2049). Using a real discount rate of 9.5 percent,[3] DOE estimates that the INPV for manufacturers of commercial packaged boilers in the case without amended standards is $277.6 million in 2015$. Under amended standards, DOE expects the change in INPV to range from approximately −6.7 to −3.7 percent, which corresponds to approximately −$18.5 to −$10.3 million (in 2015$). In order to bring equipment into compliance with amended standards, DOE expects the industry to incur $21.2 million in conversion costs.

DOE's analysis of the impacts of the adopted standards on manufacturers is described in section IV.J and section V.B.2 of this document.

C. National Benefits and Costs[4]

DOE's analyses indicate that the adopted standards would save a significant amount of energy. The lifetime energy savings for commercial packaged boilers purchased in the 30-year period that begins in the anticipated first full year of compliance with amended standards (2020–2049), relative to the case without amended standards (referred to as the ''no-new-standards case''), amount to 0.27 quadrillion Btu (quad).[5] This represents a savings of 0.6 percent relative to the energy use of this equipment in the no-new-standards case.[6]

The cumulative net present value (NPV) of total consumer benefits of the amended standards for commercial packaged boilers ranges from $0.558 billion (at a 7-percent discount rate) to $1.977 billion (at a 3-percent discount rate). This NPV expresses the estimated total value of future operating-cost savings minus the estimated increased equipment and installation costs for commercial packaged boilers purchased in 2020–2049.

In addition, the adopted CPB standards are projected to yield significant environmental benefits. The energy savings described in this section are estimated to result in cumulative emission reductions (over the same period as for energy savings) of 16 million metric tons (Mt)[7] of carbon dioxide (CO_2), 139 thousand tons of methane (CH_4), 3.1 thousand tons of sulfur dioxide (SO_2), 41 thousand tons of nitrogen oxides (NO_X), 0.1 thousand tons of nitrous oxide (N_2O), and 0.0003 tons of mercury (Hg).[8] The estimated cumulative reduction in CO_2 emissions through 2030 amounts to 1.58 Mt, which is equivalent to the emissions resulting from the annual electricity use of 0.233 million homes.

[3] DOE estimated draft financial metrics, including the industry discount rate, based on data from Securities and Exchange Commission (SEC) filings. DOE presented the draft financial metrics to manufacturers in MIA interviews and adjusted those values based on feedback from industry. The complete set of financial metrics and more detail about the methodology can be found in section 12.4.3 of chapter 12 of the TSD.

[4] All monetary values in this section are expressed in 2015 dollars and, where appropriate, are discounted to 2016.

[5] A quad is equal to 10^{15} British thermal units (Btu). The quantity refers to full-fuel-cycle (FFC) energy savings. FFC energy savings include the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and thus present a more complete picture of the impacts of energy efficiency standards. For more information on the FFC metric, see section IV.H.2 of this document.

[6] The no-new-standards case assumptions are described in section IV.F.9 of this document.

[7] A metric ton is equivalent to 1.1 short tons. Results for emissions other than CO_2 are presented in short tons (ton).

[8] DOE calculated emissions reductions relative to the no-new-standards-case, which reflects key assumptions in the *Annual Energy Outlook 2016* (*AEO2016*). *AEO2016* represents current federal and state legislation and final implementation of regulations as of the end of February 2016.

The value of the CO_2 reductions is calculated using a range of values per metric ton (t) of CO_2 (otherwise known as the ''social cost of CO_2,'' or SCC) developed by a Federal interagency working group.[9] The derivation of the SCC values is discussed in section IV.L.1 of this document. Using discount rates appropriate for each set of SCC values (see Table I.3), DOE estimates the present value of the CO_2 emissions reduction is between $0.1 billion and $1.5 billion, with a value of $0.48 billion using the central SCC case represented by $40.6 per metric ton in 2015.[10] DOE also estimates the present monetary value of the NO_X emissions reduction is $0.35 billion at a 7-percent discount rate and $0.99 billion at a 3-percent discount rate.[11] DOE is investigating appropriate valuation of the reduction in other emissions and did not include any such values in this rulemaking. More detailed results can be found in chapter 14 of the final rule TSD.

Table I.3 summarizes the national economic benefits and costs expected to result from the adopted standards for commercial packaged boilers.

TABLE I.3—SELECTED CATEGORIES OF NATIONAL ECONOMIC BENEFITS AND COSTS OF ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PACKAGED BOILERS

[TSL 2 *]

Category	Present value (million 2015$)	Discount rate (%)
Benefits		
Operating Cost Savings	907	7
	2,585	3
CO_2 Reduction Monetized Value (using mean SCC at 5% discount rate) **	100	5
CO_2 Reduction Monetized Value (using mean SCC at 3% discount rate) **	482	3
CO_2 Reduction Monetized Value (using mean SCC at 2.5% discount rate) **	777	2.5
CO_2 Reduction Monetized Value (using 95th percentile SCC at 3% discount rate) **	1,468	3
NO_X Reduction †	35	7
	99	3
Total Benefits ‡	1,425	7
	3,166	3
Costs		
Incremental Installed Costs	350	7
	609	3
Total Net Benefits		
Including CO_2 and NO_X Reduction Monetized Value ‡	1,075	7
	2,558	3

* This table presents the costs and benefits associated with commercial packaged boilers shipped in 2020–2049. These results include benefits to consumers that accrue after 2049 from the equipment purchased in 2020–2049. The incremental installed costs include incremental equipment cost as well as installation costs. The CO_2 reduction benefits are global benefits due to actions that occur nationally.

** The interagency group selected four sets of SCC values for use in regulatory analyses. Three sets of values are based on the average SCC from the integrated assessment models, at discount rates of 5 percent, 3 percent, and 2.5 percent. For example, for 2015 emissions, these values are $12.4/t, $40.6/t, and $63.2/t, in 2015$, respectively. The fourth set ($118/t in 2015$ for 2015 emissions), which represents the 95th percentile of the SCC distribution calculated using a 3-percent discount rate, is included to represent higher-than-expected impacts from temperature change further out in the tails of the SCC distribution. The SCC values are emission year specific. See section IV.L.1 for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.2 for further discussion. To be conservative, DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the Electricity Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using only the average SCC with 3-percent discount rate.

The benefits and costs of the adopted energy conservation standards, for covered commercial packaged boilers sold in 2020–2049, can also be expressed in terms of annualized values. The monetary values for the total annualized net benefits are the sum of (1) the annualized national economic value of the benefits from consumer operation of the equipment that meets the amended standards (consisting primarily of reduced operating costs minus increases in equipment purchase price and installation costs) and (2) the

[9] United States Government—Interagency Working Group on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* (Revised July 2015). *https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

[10] The values only include CO_2 emissions; CO_2 equivalent emissions from other greenhouse gases are not included.

[11] DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See section IV.L.2 for further discussion. The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. *Chamber of Commerce, et al.* v. *EPA, et al.,* Order in Pending Case, 577 U.S. ____ (2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan. To be conservative, DOE is primarily using a national benefit-per-ton estimate for NO_X emitted from the Electricity Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011), the values would be nearly two-and-a-half times larger.

annualized value of the benefits of CO_2 and NO_X emission reductions.[12]

The national operating cost savings are domestic private U.S. consumer monetary savings that occur as a result of purchasing the covered equipment. The national operating cost savings is measured for the lifetime of commercial packaged boilers shipped in 2020–2049. The CO_2 reduction is a benefit that accrues globally due to decreased domestic energy consumption that is expected to result from this rule. Because CO_2 emissions have a very long residence time in the atmosphere,[13] the SCC values in future years reflect future CO_2-emissions impacts that continue beyond 2100 through 2300.

Estimates of annualized benefits and costs of the amended standards are shown in Table I.4. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than CO_2 reductions (for which DOE used a 3-percent discount rate along with the average SCC series corresponding to a value of $40.6/t in 2015 (2015$)),[14] the estimated cost of the adopted standards for CPB equipment is $35 million per year in increased equipment costs, while the estimated benefits are $90 million per year in reduced equipment operating costs, $27 million per year in CO_2 reductions, and $3.5 million per year in reduced NO_X emissions. In this case, the net benefit amounts to $85 million per year.

Using a 3-percent discount rate for all benefits and costs and the average SCC series corresponding to a value of $40.6/t in 2015 (in 2015$), the estimated cost of the adopted standards for commercial packaged boilers is $34 million per year in increased equipment costs, while the estimated annual benefits are $144 million in reduced operating costs, $27 million in CO_2 reductions, and $5.5 million in reduced NO_X emissions. In this case, the net benefit would amount to $143 million per year.

TABLE I.4—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PACKAGED BOILERS

	Discount rate	Primary estimate *	Low net benefits estimate *	High net benefits estimate *
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings *	7%	90	80	98.
	3%	144	128	160.
CO_2 Reduction Monetized Value (using mean SCC at 5% discount rate) * **.	5%	8	7	8.
CO_2 Reduction Monetized Value (using mean SCC at 3% discount rate) * **.	3%	27	24	29.
CO_2 Reduction Monetized Value (using mean SCC at 2.5% discount rate) * **.	2.5%	40	36	43.
CO_2 Reduction Monetized Value (using 95th percentile SCC at 3% discount rate) * **.	3%	82	74	89.
NO_X Reduction †	7%	3	3	9.
	3%	5	5	12.
Total Benefits ‡	7% plus CO_2 range	101 to 175	90 to 158	115 to 196.
	7%	120	108	136.
	3% plus CO_2 range	157 to 231	140 to 208	180 to 261.
	3%	177	158	201.
Costs				
Consumer Incremental Equipment Costs	7%	35	31	37.
	3%	34	31	37.
Net Benefits				
Total ‡	7% plus CO_2 range	66 to 140	59 to 127	78 to 158.
	7%	85	77	99.
	3% plus CO_2 range	123 to 198	109 to 177	144 to 224.

[12] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2016, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (*e.g.,* 2020 or 2030), and then discounted the present value from each year to 2016. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates, as shown in Table I.4. Using the present value, DOE then calculated the fixed annual payment over a 30-year period starting in the compliance year that yields the same present value.

[13] The atmospheric lifetime of CO_2 is estimated to be on the order of 30–95 years. Jacobson, MZ, ''Correction to 'Control of fossil-fuel particulate black carbon and organic matter, possibly the most effective method of slowing global warming,' '' *J. Geophys. Res.* 110. pp. D14105 (2005).

[14] DOE used a 3-percent discount rate because the SCC values for the series used in the calculation were derived using a 3-percent discount rate (see section IV.L).

TABLE I.4—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PACKAGED BOILERS—Continued

	Discount rate	Primary estimate *	Low net benefits estimate *	High net benefits estimate *
		(million 2015$/year)		
	3%	143	127	165.

* This table presents the annualized costs and benefits associated with commercial packaged boilers shipped in 2020–2049. These results include benefits to consumers that accrue after 2049 from the equipment purchased in 2020–2049. The incremental installed costs include incremental equipment cost as well as installation costs. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Benefits, and High Benefits Estimates utilize projections of building stock and energy prices from the *AEO2016* No-CPP case, a Low Economic Growth case, and a High Economic Growth case, respectively. In addition, DOE used a constant equipment price assumption as the default price projection; the cost to manufacture a given unit of higher efficiency neither increases nor decreases over time. Compared to a case where a reduction in equipment price over time is applied (*e.g.,* due to an observed price learning), a constant price assumption results in a more conservative estimate of economic benefits. The equipment price projection is described in section IV.F.1 of this document and chapter 8 of the final rule technical support document (TSD). In addition, DOE used estimates for equipment efficiency distribution in its analysis based on national data supplied by industry. Purchases of higher efficiency equipment are a result of many different factors unique to each consumer including boiler heating loads, installation costs, site environmental consideration, and others. For each consumer, all other factors being the same, it would be anticipated that higher efficiency purchases in the baseline would correlate positively with higher energy prices. To the extent that this occurs, it would be expected to result in some lowering of the consumer operating cost savings from those calculated in this rule.

** The CO_2 reduction benefits are calculated using 4 different sets of SCC values. The first three use the average SCC calculated using 5-percent, 3-percent, and 2.5-percent discount rates, respectively. The fourth represents the 95th percentile of the SCC distribution calculated using a 3-percent discount rate. The SCC values are emission year specific. See section IV.L.1 for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.2 for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the ACS study.

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using the average SCC with 3-percent discount rate. In the rows labeled "7% plus CO_2 range" and "3% plus CO_2 range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of CO_2 values.

DOE's analysis of the national impacts of the adopted standards is described in sections IV.H, IV.K, and IV.L of this document.

D. Conclusion

Based on the analysis culminating in this final rule, DOE finds the benefits of the amended standards to the Nation (energy savings, positive NPV of consumer benefits, consumer LCC savings, and emission reductions) outweigh the burdens (loss of INPV for manufacturers and LCC increases for some consumers). DOE also concludes that the amended standards represent significant additional energy conservation and are technologically feasible and economically justified. DOE further notes that equipment achieving these standard levels is already commercially available for all equipment classes covered by this final rule.[15]

II. Introduction

The following section briefly discusses the statutory authority underlying this final rule, as well as some of the relevant historical background related to the establishment of standards for commercial packaged boilers.

A. Authority

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 90.1 (ASHRAE Standard 90.1), "Energy Standard for Buildings Except Low-Rise Residential Buildings," sets industry energy efficiency levels for small, large, and very large commercial package air-conditioning and heating equipment, packaged terminal air conditioners, packaged terminal heat pumps, warm air furnaces, packaged boilers, storage water heaters, instantaneous water heaters, and unfired hot water storage tanks (collectively "ASHRAE equipment"). For each type of listed equipment, EPCA directs that if ASHRAE amends Standard 90.1, DOE must adopt amended standards at the new ASHRAE efficiency level, unless DOE determines, supported by clear and convincing evidence, that adoption of a more stringent level would produce significant additional conservation of energy and would be technologically feasible and economically justified. (42 U.S.C. 6313(a)(6)(A)(ii)

Under EPCA, DOE must also review energy efficiency standards for commercial packaged boilers every six years and either: (1) Issue a notice of determination that the standards do not need to be amended as adoption of a more stringent level is not supported by clear and convincing evidence; or (2) issue a notice of proposed rulemaking including new proposed standards based on certain criteria and procedures in subparagraph (B).[16] (42 U.S.C. 6313(a)(6)(C))

In deciding whether a more-stringent standard is economically justified, under either the provisions of 42 U.S.C. 6313(a)(6)(A) or (C), DOE must determine whether the benefits of the standard exceed its burdens. DOE must make this determination after receiving comments on the proposed standard, and by considering, to the maximum extent practicable, the following seven factors:

(1) The economic impact of the standard on manufacturers and

[15] See chapter 3 of the final rule TSD for information about the efficiency ratings of equipment currently available on the market.

[16] In relevant part, subparagraph (B) specifies that: (1) In making a determination of economic justification, DOE must consider, to the maximum extent practicable, the benefits and burdens of an amended standard based on the seven criteria described in EPCA; (2) DOE may not prescribe any standard that increases the energy use or decreases the energy efficiency of a covered product; and (3) DOE may not prescribe any standard that interested persons have established by a preponderance of evidence is likely to result in the unavailability in the United States of any product type (or class) of performance characteristics (including reliability, features, sizes, capacities, and volumes) that are substantially the same as those generally available in the United States. (42 U.S.C. 6313(a)(6)(B)(ii)–(iii))

consumers of products subject to the standard;

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial charges, or maintenance expenses for the covered equipment that are likely to result from the standard;

(3) The total projected amount of energy savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the covered product likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy conservation; and

(7) Other factors the Secretary of Energy considers relevant.

42 U.S.C. 6313(a)(6)(B)(ii)(I)–(VII))

Because ASHRAE did not update its efficiency levels for commercial packaged boilers in any of its most recent updates to ASHRAE Standard 90.1 (*i.e.,* ASHRAE Standard 90.1–2010, ASHRAE Standard 90.1–2013, and ASHRAE Standard 90.1–2016), DOE is analyzing amended standards consistent with the procedures defined under 42 U.S.C. 6313(a)(6)(C).

EPCA, as codified, also contains what is known as an ''anti-backsliding'' provision, which prevents DOE from prescribing any amended standard that either increases the maximum allowable energy use or decreases the minimum required energy efficiency of a covered product. (42 U.S.C. 6313(a)(6)(B)(iii)(I)) Furthermore, DOE may not prescribe an amended or new standard if interested persons have established by a preponderance of the evidence that the standard is likely to result in the unavailability in the United States of any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States at the time of the Secretary's finding. (42 U.S.C. 6313(a)(6)(B)(iii)(II)(aa))

Further, EPCA, as codified, establishes a rebuttable presumption that an energy conservation standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product that complies with the standard will be less than three times the value of the energy (and, as applicable, water) savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii)) However, while this rebuttable presumption analysis applies to most commercial and industrial equipment (42 U.S.C. 6316(a)), it is not a required analysis for ASHRAE equipment, including commercial packaged boilers (42 U.S.C. 6316(b)(1)). Nonetheless, DOE considered the criteria for rebuttable presumption as part of its economic justification analysis.

After carefully reviewing all CPB equipment classes, DOE has concluded that amended energy conservation standards for 8 of the 12 CPB equipment classes adopted in this final rule (*i.e.,* all commercial packaged boilers with rated inputs ≤10,000 kBtu/h) will result in significant additional conservation of energy and are technologically feasible and economically justified, as mandated by 42 U.S.C. 6313(a)(6).

For the remaining 4 equipment classes, (*i.e.,* all commercial packaged boilers with rated inputs >10,000 kBtu/h), DOE tentatively decided in the March 2016 NOPR not to amend energy conservation standards because of a lack of sufficient data to justify amended standards. 81 FR 15836, 15851–15853 (March 24, 2016). DOE did not receive any additional information or data that would support the rulemaking analysis for such commercial packaged boilers. Therefore, DOE maintains the existing standards because there is not sufficient data to support, by clear and convincing evidence, more stringent standards for commercial packaged boilers with rated inputs >10,000 kBtu/h. (42 U.S.C. 6313(a)(6)(C)(i)(I) For more discussion on commercial packaged boilers with rated input greater than 10,000 kBtu/h, see section IV.A.3 of this final rule.

B. Background

1. Current Standards

Prior to this final rule, DOE last amended its energy conservation standards for commercial packaged boilers through a final rule published in the **Federal Register** on July 22, 2009 (July 2009 final rule). 74 FR 36312. More specifically, the July 2009 final rule updated the energy conservation standards for commercial packaged boilers to correspond to the levels in the 2007 revision of ASHRAE Standard 90.1 (*i.e.,* ASHRAE Standard 90.1–2007). The July 2009 final rule established thermal efficiency as the energy efficiency metric for all equipment classes other than commercial packaged boilers with fuel rated input greater than 2,500,000 Btu/h and that are designed to deliver hot water. For such equipment classes (*i.e.,* gas-fired and oil-fired hot water commercial packaged boilers with rated input greater than 2,500,000 Btu/h), DOE established combustion efficiency as the energy efficiency metric. Compliance with the standards adopted in the July 2009 final rule was required beginning on March 2, 2012. These levels are shown in Table II.1. Also in the July 2009 final rule, DOE again followed ASHRAE's approach in Standard 90.1–2007 and adopted a second tier of energy conservation standards for two classes of commercial packaged boilers, which are shown in Table II.2. Compliance with the latter standards is required beginning on March 2, 2022.

TABLE II.1—FEDERAL ENERGY EFFICIENCY STANDARDS FOR COMMERCIAL PACKAGED BOILERS MANUFACTURED ON OR AFTER MARCH 2, 2012

Equipment type	Subcategory	Size category (input)	Efficiency level—effective date: March 2, 2012 *
Hot Water Commercial Packaged Boilers.	Gas-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h	80.0% E_T.
Hot Water Commercial Packaged Boilers.	Gas-fired	>2,500,000 Btu/h	82.0% E_C.
Hot Water Commercial Packaged Boilers.	Oil-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h	82.0% E_T.
Hot Water Commercial Packaged Boilers.	Oil-fired	>2,500,000 Btu/h	84.0% E_C.
Steam Commercial Packaged Boilers	Gas-fired—All, Except Natural Draft	≥300,000 Btu/h and ≤2,500,000 Btu/h	79.0% E_T.
Steam Commercial Packaged Boilers	Gas-fired—All, Except Natural Draft	>2,500,000 Btu/h	79.0% E_T.
Steam Commercial Packaged Boilers	Gas-fired—Natural Draft	≥300,000 Btu/h and ≤2,500,000 Btu/h	77.0% E_T.

TABLE II.1—FEDERAL ENERGY EFFICIENCY STANDARDS FOR COMMERCIAL PACKAGED BOILERS MANUFACTURED ON OR AFTER MARCH 2, 2012—Continued

Equipment type	Subcategory	Size category (input)	Efficiency level—effective date: March 2, 2012 *
Steam Commercial Packaged Boilers ..	Gas-fired—Natural Draft	>2,500,000 Btu/h	77.0% E_T.
Steam Commercial Packaged Boilers ..	Oil-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h	81.0% E_T.
Steam Commercial Packaged Boilers ..	Oil-fired	>2,500,000 Btu/h	81.0% E_T.

* E_T means ''thermal efficiency.'' E_C means ''combustion efficiency.''

TABLE II.2—FEDERAL ENERGY EFFICIENCY STANDARDS FOR COMMERCIAL PACKAGED BOILERS MANUFACTURED ON OR AFTER MARCH 2, 2022

Equipment type	Subcategory	Size category (input)	Efficiency level—effective date: March 2, 2022
Steam Commercial Packaged Boilers ..	Gas-fired—Natural Draft	≥300,000 Btu/h and ≤2,500,000 Btu/h	79.0% E_T.
Steam Commercial Packaged Boilers ..	Gas-fired—Natural Draft	>2,500,000 Btu/h	79.0% E_T.

2. History of Standards Rulemaking for Commercial Packaged Boilers

DOE is conducting this rulemaking pursuant to 42 U.S.C. 6313(a)(6)(C), which requires that every 6 years, DOE must publish either: (1) A notice of the determination that standards for the equipment do not need to be amended, or (2) a NOPR including proposed energy conservation standards. As noted above, DOE's last final rule for commercial packaged boilers was published on July 22, 2009. DOE is issuing this final rule pursuant to its statutory obligation under 42 U.S.C. 6313(a)(6)(C).

In initiating this rulemaking, DOE prepared a Framework document, ''Energy Conservation Standards Rulemaking Framework Document for Commercial Packaged Boilers,'' which describes the procedural and analytical approaches DOE anticipated using to evaluate energy conservation standards for commercial packaged boilers. DOE published a notice that announced both the availability of the Framework document and a public meeting to discuss the proposed analytical framework for the rulemaking. That notice also invited written comments from the public. 78 FR 54197 (Sept. 3, 2013). The Framework document is available at: *https://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/79.*

DOE held a public meeting on October 1, 2013, at which it described the various analyses DOE would conduct as part of the rulemaking, such as the engineering analysis, the life-cycle cost (LCC) and payback period (PBP) analyses, and the national impact analysis (NIA). Representatives of manufacturers, trade associations, environmental and energy efficiency advocates, and other interested parties attended the meeting. The participants discussed the following major topics, among others: (1) The rulemaking scope (2) test procedures for commercial packaged boilers; and (3) various issues related to the planned analyses of amended energy conservation standards. Interested parties also provided comments on the Framework document, which DOE considered and responded to in chapter 2 of the preliminary analysis TSD.

On November 20, 2014, DOE published a second notice, ''Energy Conservation Standards for Commercial Packaged Boilers: Public Meeting and Availability of the Preliminary Technical Support Document'' in the **Federal Register** to announce the availability of the preliminary analysis technical support document (TSD). 79 FR 69066. The preliminary analysis TSD provided preliminary results of the analyses that DOE conducted in support of the energy conservation standards rulemaking. DOE invited interested parties to comment on the preliminary analysis, and requested public comments on specific issues related to the TSD. These issues are listed in the Executive Summary chapter of the preliminary analysis TSD. The preliminary analysis TSD is available at: *https://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/79.*

On December 9, 2014, DOE held a public meeting, at which it described the methodology and preliminary results of the various analyses it conducted as part of the rulemaking, such as the engineering analysis, the LCC and PBP analyses, and the NIA. Representatives of manufacturers, trade associations, environmental and energy efficiency advocates, and other interested parties attended the meeting. The public meeting provided an opportunity for the attendees to provide feedback and comments that would help improve DOE's analysis and results for the NOPR stage. In addition, DOE also received several written comments from interested parties and stakeholders, in response to the preliminary analysis TSD.

On March 24, 2016, DOE subsequently published a notice of proposed rulemaking (NOPR) and notice of public meeting in the **Federal Register** (March 2016 NOPR) that addressed all of the comments received in response to the preliminary analysis TSD and proposed amended energy conservation standards for commercial packaged boilers. 81 FR 15836. In addition to amended energy conservation standards, DOE also proposed to reorganize the equipment class structure for commercial packaged boilers. The March 2016 NOPR also updated the rulemaking analysis based on comments received in response to the preliminary analysis and the most recent data sources available, and sought comments from interested parties on specific issues listed in the March 2016 NOPR. The March 2016 NOPR and the NOPR TSD are available at: *https://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/79.*

On April 21, 2016, DOE held a public meeting where it presented and discussed the analyses conducted as part of this rulemaking (*e.g.,* engineering analysis, LCC and PBP analysis, national impact analysis). In the public meeting, DOE presented the results of these analyses and requested comments

from stakeholders on various issues related to the rulemaking. In response to the March 2016 NOPR, DOE received both verbal comments (during the public meeting) and written comments from interested parties that were considered while updating its analysis for this final rule. The interested parties that commented on the March 2016 NOPR are shown in Table II.3 of this final rule.

TABLE II.3—PARTIES THAT PROVIDED COMMENTS ON THE MARCH 2016 NOPR

Name of party	Abbreviation	Source of comments	Type *
Air-Conditioning, Heating and Refrigeration Institute	AHRI	Public Meeting, Written	TA
American Boiler Manufacturers Association	ABMA	Public Meeting, Written	TA
American Council for Energy Efficient Economy, Appliance Standards Awareness Project, Natural Resource Defense Council, Northwest Energy Efficiency Alliance.	Joint Advocates	Written	EA
American Gas Association, American Public Gas Association	Gas Associations	Public Meeting, Written	UA
Appliance Standards Awareness Project	ASAP	Public Meeting	EA
Bradford White Corporation	Bradford White	Written	M
Burnham Holdings	BHI	Written	M
Cato Institute	Cato	Written	O
The U.S. Chamber of Commerce, the American Chemistry Council, the American Coke and Coal Chemicals Institute, the American Forest & Paper Association, the American Fuel & Petrochemical Manufacturers, the American Petroleum Institute, the Brick Industry Association, the Council of Industrial Boiler Owners, the National Association of Manufacturers, the National Mining Association, the National Oilseed Processors Association, and the Portland Cement Association.	The Associations	Written	TA
Crown Boiler	Crown	Public Meeting, Written	M
Industrial Energy Consumers of America	IECA	Written	TA
Lochinvar, LLC	Lochinvar	Public Meeting, Written	M
Sidel Systems	Sidel	Written	M
Pacific Gas & Electric, San Diego Gas & Electric	Joint Utilities	Written, Public Meeting	U
Phoenix Energy Management	PEM	Public Meeting	C
Raypak, Inc	Raypak	Public Meeting, Written	M
Southern California Gas	SoCalGas	Public Meeting, Written	U
Spire (formerly The LaClede Group, Inc.)	Spire/LaClede	Public Meeting	U
	Spire	Written	
Tom Nussbaum	Tom Nussbaum	Written	I
Weil-McLain	Weil-McLain	Written	M

* TA: Trade Association; EA: Efficiency/Environmental Advocate; M: Manufacturer; C: Contractor; U: Utility; UA: Utility Association; I: Individual; O: Other.

In parallel to the energy conservation standards rulemaking, DOE published a notice of proposed determination on August 13, 2013 (August 2013 NOPD), which initiated a coverage determination to explicitly clarify DOE's statutory authority under EPCA to cover natural draft commercial packaged boilers. DOE initiated this coverage determination because the existing definition of ''packaged boiler'' could have allowed for differing interpretations as to whether natural draft commercial packaged boilers are covered equipment. 78 FR 49202. In the August 2013 NOPD, DOE proposed a definition for natural draft commercial packaged boilers that would clarify its statutory authority to cover such equipment. DOE sought public comments in response to its proposed determination and definition for natural draft commercial packaged boilers, and received several written comments from interested parties. In addition, DOE also received several comments in response to the preliminary analysis TSD that are relevant to the issue of coverage determination of natural draft commercial packaged boilers. After carefully reviewing all of the comments received on the issue of coverage determination of natural draft commercial packaged boilers and determining that the comments indicated a common and long-standing understanding from interested parties that natural draft commercial packaged boilers are and have been covered equipment under part A–1 of Title III of EPCA, DOE decided to withdraw the August 2013 NOPD on August 25, 2015 (August 2015 withdrawal notice). 80 FR 51487.

DOE also recently completed a separate test procedure rulemaking to consider an amended test procedure for commercial packaged boilers. On February 20, 2014, DOE initiated the test procedure rulemaking by publishing a request for information (RFI) in the **Federal Register** that sought comments and information from stakeholders on several issues pertaining to the CPB test procedure. 79 FR 9643. On March 17, 2016, DOE published a NOPR in the **Federal Register**, which proposed to update the test procedure for determining the efficiency of commercial packaged boilers (2016 CPB TP NOPR). 81 FR 14642. Subsequently, on December 9, 2016, DOE published a final rule in the **Federal Register**, which updated the test procedure for commercial packaged boilers. 81 FR 89276. Section III.B of this document briefly discusses the amendments made to the test procedure.[17] The analyses conducted for this final rule reflect the changes adopted in the December 2016 test procedure final rule. (2016 CPB TP final rule)

III. General Discussion

A. Compliance Dates

In 42 U.S.C. 6313(a), EPCA prescribes a number of compliance dates for amended standards for commercial packaged boilers. These compliance dates vary depending on the specific statutory authority under which DOE is conducting its review (*i.e.,* whether DOE is triggered by a revision to ASHRAE Standard 90.1 or whether DOE is undertaking a 6-year review), and the action taken (*i.e.,* whether DOE is adopting ASHRAE Standard 90.1 levels or more stringent levels). The discussion

[17] For detailed discussion on the test procedure including the comments and DOE's response please see the docket #EERE–2014–BT–TP–0006.

that follows explains the compliance dates as they pertain to this rulemaking.

As discussed in section II.A of this document, EPCA requires that at least once every 6 years, DOE must review standards for commercial packaged boilers and publish either a notice of determination that standards for this type of equipment do not need to be amended or a NOPR containing amended standards. (42 U.S.C. 6313(a)(6)(C)(i)) EPCA requires that an amended standard prescribed under 42 U.S.C. 6313(a)(6)(C) must apply to products manufactured after the date that is the later of: (1) The date 3 years after publication of the final rule establishing a new standard or (2) the date 6 years after the effective date of the current standard for a covered product. (42 U.S.C. 6313(a)(6)(C)(iv)) The current standards for commercial packaged boilers went into effect in 2012. Thus, the date 3 years after publication of this final rule is later than the date 6 years after 2012, the effective date of the current standard. As a result, compliance with any amended energy conservation standards promulgated in this final rule is required starting from the dates specified in paragraph (b) of 10 CFR 431.87.

B. Test Procedure

1. Summary of Recent Updates

DOE's current test procedure for commercial packaged boilers is found at 10 CFR 431.86.

As stated previously, on December 9, 2016, DOE published a final rule amending the CPB test procedure. 81 FR 89276. The 2016 CPB TP final rule adopted specific sections of American National Standards Institute (ANSI)/AHRI Standard 1500, ''Standard for Performance Rating of Commercial Space Heating Boilers,'' (ANSI/AHRI Standard 1500–2015) as the basis of the test procedure for commercial packaged boilers, replacing the previous industry test standard BTS–2000. In addition, the 2016 CPB TP final rule incorporates the following amendments to the DOE test procedure: (1) Clarifies the coverage for field-constructed commercial packaged boilers and the applicability of DOE's test procedure and standards for this category of commercial packaged boilers, (2) provides an optional field test for commercial packaged boilers with rated input greater than 5,000,000 Btu/h, (3) provides a conversion method to calculate thermal efficiency based on combustion efficiency testing for steam commercial packaged boilers with rated input greater than 5,000,000 Btu/h, (4) modifies the inlet water temperature requirements during tests of hot water commercial packaged boilers, (5) establishes limits on the ambient temperature and relative humidity conditions during testing, (6) modifies setup and instrumentation requirements to remove ambiguity, and (7) standardizes terminology and provisions for ''fuel input rate'' and ''rated input.''

In response to the March 2016 NOPR, DOE received several comments that are specifically related to the CPB test procedure. Comments related to the technical aspects of the test procedure development were considered and addressed in the test procedure final rule.

2. Timing of the Test Procedure and Energy Conservation Standards Rulemakings

Several stakeholders expressed legal, procedural, and practical concerns regarding the timing of the test procedure and energy conservation standards revisions for commercial packaged boilers, and requested that DOE delay any further work on the rulemakings to amend efficiency standards until after the finalization of the test procedure. (Bradford White, No. 68 at p. 1; Gas Associations, No. 69 at p. 2; BHI, No. 71 at p. 5; Lochinvar, No. 70 at p. 7; AHRI, No. 76 at pp. 2–3; ABMA, No. 64 at p. 1, Crown, Public Meeting Transcript, No. 61 at p. 13; AHRI, Public Meeting Transcript, No. 61, at p. 14); [18] AHRI highlighted that DOE has two years from the publication of the NOPR for energy conservation standards before it must publish a final rule for CPB standards under 42 U.S.C. 6313(a)(6)(C)(iii), and asserted that DOE has sufficient time to finalize the test procedure and subsequently reopen comments on the proposed standard. (AHRI, No. 76 at p. 5)

AHRI argued that the non-final status of the test procedure inhibits stakeholders' fair evaluation of the proposed standards and stressed the importance of having a known efficiency test procedure. AHRI pointed out that DOE is required to provide stakeholders the opportunity to submit meaningful comments (42 U.S.C. 6306(a), 42 U.S.C. 6314(b)), and opined that the joint proposal of test procedures and standards eliminates that opportunity. (AHRI, No. 76 at pp. 2–3)

AHRI further commented that having simultaneous rulemakings creates an unfair burden on stakeholders. (AHRI, Public Meeting Transcript, No. 61 at p. 80) Similarly, Raypak, Bradford White, and Crown commented that the ongoing changes to the test procedure do not allow manufacturers the opportunity to properly evaluate the effects of the proposed standards. Bradford White noted that their resources are focused on proposed test procedure changes. (Raypak, No. 72 at p. 1; Bradford White, No. 68 at p. 1; Crown, Public Meeting Transcript, No. 61 at p. 13; Bradford White, No. 68 at p. 12) Several stakeholders also contended that the timing of the test procedure and standards rulemaking violated DOE's own procedural policies or ''the process rule.'' (Gas Associations, No. 69 at p. 2; Bradford White, No. 68 at p. 12; Weil-McLain, No. 67 at p. 4; Spire, No. 73 at pp. 5–7; AHRI, No. 76 at p. 3; Lochinvar, No. 71 at p. 7) AHRI highlighted that the process rule is not merely a guideline, noting it was codified in the Code of Federal Regulations. AHRI contended that DOE must abide by its own regulations. (AHRI, No. 76 at p. 3)

DOE provided a detailed response on this issue in the 2016 CPB TP final rule. DOE re-iterates in this final rule that the amendments to the Federal test procedure includes updates to the referenced industry test standard (ANSI/AHRI Standard 1500–2015) which was developed by a consensus-based AHRI process. In May 2015, AHRI petitioned DOE to replace its references to BTS–2000 with ANSI/AHRI Standard 1500–2015. In addition, DOE received insightful and detailed comments on the proposed amendments to the test procedure in response to the 2016 CPB TP NOPR. Considering these developments leading up to the 2016 CPB TP final rule, the industry was involved at all stages of the test procedure rulemaking, and DOE's amendments are largely in keeping with the test methodology found in consensus-based industry standard ANSI/AHRI Standard 1500–2015. Any deviations in the 2016 CPB TP final rule from ANSI/AHRI 1500–2015 are a result of DOE's efforts to make the test procedure better reflect the energy efficiency during a representative average use cycle, as required by EPCA. (42 U.S.C. 6314(a)(2)). In the 2016 CPB TP final rule, as discussed in section III.B.3, DOE concluded that the amendments to the test procedure that were ultimately adopted would mitigate

[18] DOE will identify comments received in response to the March 2016 CPB ECS NOPR and placed in Docket No. EERE–2013–BT–STD–0030 by the commenter, the number of the comment document as listed in the docket maintained at *www.regulations.gov,* and the page number of that document where the comment appears (for example: Bradford White, No. 68 at p. 1). If a comment was made during the CPB ECS NOPR public meeting, DOE will also specifically identify those as being located in the NOPR public meeting transcript (for example: Crown, Public Meeting Transcript, No. 61 at p. 13).

concerns regarding the impact on ratings. 81 FR 89276, 89281–89282 (December 9, 2016).

Furthermore, in the energy conservation standards rulemaking, DOE granted a 30-day extension of the comment period following the publication of the March 2016 NOPR to ensure that stakeholders had sufficient time to comment on the analyses and results. Therefore, DOE believes that stakeholders have had adequate time to gauge the effect of the standards rulemaking to enable them to provide meaningful comments on its analysis and results.

Regarding the commenters' assertions that DOE has violated the process rule, DOE notes that the codified procedures at 10 CFR part 430, subpart C, appendix A (7)(c), Appendix A establish procedures, interpretations, and policies to guide DOE in the consideration and promulgation of new or revised appliance efficiency standards under EPCA. (See section 1 of 10 CFR part 430 subpart C, appendix A) These procedures are a general guide to the steps DOE typically follows in promulgating energy conservation standards. The guidance recognizes that DOE can and will, on occasion, deviate from the typical process. In the case of commercial packaged boilers, DOE was petitioned by the industry to adopt the industry test standard AHRI Standard 1500–2015, while the energy conservation standards rulemaking was in process. The energy conservation standards rulemaking was initiated in August 2013 with the publication of the Framework document, as discussed in section II.B.2 of this final rule, and AHRI petitioned DOE to amend the test procedure in May 2015, as noted above. Therefore, per AHRI's request, DOE initiated a test procedure rulemaking concurrent with the standards rulemaking. As noted above and discussed in section III.B.3, the changes to the test procedure that were ultimately adopted in the 2016 CPB TP final rule mitigated stakeholders' concerns about impacts to efficiency ratings. Accordingly, DOE has concluded that there is no basis to delay the final rule adopting standards for commercial packaged boilers.

3. Impact on Efficiency Ratings

Several commenters indicated that they expected that the proposed changes to the test procedure would result in changes to the rated efficiency. Lochinvar, BHI, and AHRI questioned DOE's tentative determination that the test procedure changes would not impact efficiency ratings. (Lochinvar, No. 70 at p. 7; BHI, No. 71 at p. 3; AHRI No. 76 at p. 4)

Lochinvar noted that DOE's own test summary shows that the TP changes would reduce the rated efficiency of some boilers. Lochinvar also stated that anti-backsliding provisions would prevent DOE from making any changes to the standard after the fact if TP changes negatively impact ratings. (Lochinvar, No. 70 at p. 7) AHRI noted that DOE's conclusion that the efficiency ratings would not be impacted by the proposed test procedure changes is based on limited testing data, and stakeholders did not have sufficient time to provide meaningful comments. (AHRI No. 76 at p. 4) BHI added that that the rating of some equipment could be significantly impacted, given that the test procedure is significantly different. (BHI, No. 71 at pp. 3, 4–5) They suggested that the efficiency of 85-percent E_T ''Category I'' boilers in the directory will change due to the proposed water temperature changes in the 2016 CPB TP NOPR. (BHI, No. 71 at p. 10) Raypak provided similar comments. (Raypak, No. 72 at p. 3)

Weil-McLain and SoCalGas commented that the efficiency ratings of non-condensing boilers will drop due to the new test procedure and that the proposed increases in the minimum standard would combine to significantly reduce the types of feasible non-condensing equipment. (Weil-McLain, No. 67 at p. 2; SoCalGas, No. 77 at p. 2) AHRI commented that the analysis must be based on finalized test procedures in order to realistically represent the impacts of amended standards (including energy savings, cost to consumers and manufacturers). (AHRI, No. 76 at pp. 2–3) SoCal suggested that the benefits of TSL 1 may actually be closer to those calculated for TSL 2, given the proposed water temperature changes in the test procedure. (SoCalGas, No. 77 at p. 2)

In the 2016 CPB TP NOPR, DOE tentatively determined that the proposed test procedure amendments would not result in an overall measureable impact on equipment's measured efficiency. 81 FR 14642, 12878 (March 17, 2016). However, as discussed above, DOE received comments from stakeholders in response to both the March 2016 NOPR and the 2016 CPB TP NOPR suggesting that several proposals included in the 2016 CPB TP NOPR would impact efficiency ratings. In the 2016 CPB TP final rule, DOE addressed stakeholders' concerns and ultimately revised the proposals that could have resulted in changes to the efficiency ratings in order to mitigate impacts on the efficiency ratings.[19] 81 FR 89276, 89289–89290 (December 9, 2016).

C. Technological Feasibility

1. General

In each energy conservation standards rulemaking, DOE conducts a screening analysis based on information gathered on all current technology options and prototype designs that could improve the efficiency of the equipment that is the subject of the rulemaking. As the first step in such an analysis, DOE conducts a market and technology assessment that develops a list of technology options for consideration in consultation with manufacturers, design engineers, and other interested parties. DOE then determines which of those means for improving efficiency are technologically feasible. DOE considers technologies incorporated in commercially available equipment or in working prototypes to be technologically feasible. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(i)

After DOE has determined that particular technology options are technologically feasible, it further evaluates each technology option in light of the following additional screening criteria: (1) Practicability to manufacture, install, and service; (2) adverse impacts on equipment utility or availability; and (3) adverse impacts on health or safety. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(ii)–(iv) Additionally, DOE notes that these screening criteria do not directly address the proprietary status of design options. DOE only considers efficiency levels achieved through the use of proprietary designs in the engineering analysis if they are not part of a unique path to achieve that efficiency level (*i.e.,* if there are other non-proprietary technologies capable of achieving the same efficiency). DOE concludes that the amended standards for the equipment covered in this final rule do not mandate the use of any proprietary technologies, and that all manufacturers are able to achieve the amended standard levels through the use of non-proprietary designs. Section IV.B and IV.C of this final rule discuss the results of the screening analysis and engineering analysis for commercial packaged boilers. For further details on the screening analysis and engineering

[19] For additional discussion and DOE's detailed response to the comments please refer to the 2016 CPB TP final rule docketed at ID #EERE–2014–BT–TP–0006. *https://www.regulations.gov/docket?D=EERE-2014-BT-TP-0006.*

analysis for this final rule, see chapter 4 and chapter 5 of the final rule TSD.

2. Maximum Technologically Feasible Levels

When DOE proposes to adopt an amended standard for a type or class of covered equipment, it determines the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible for such equipment. Accordingly, in the engineering analysis of this final rule, DOE determined the maximum technologically feasible (''max-tech'') improvements in energy efficiency for commercial packaged boilers, using the design parameters for the most efficient equipment currently available on the market. The max-tech levels that DOE determined for this rulemaking are described in section IV.C.4 of this document and in chapter 5 of the final rule TSD.

D. Energy Savings

1. Determination of Savings

For each trial standard level (TSL), DOE projected energy savings from the application of the TSL to commercial packaged boilers purchased in the 30-year period that begins in the year of compliance with amended standards (2020–2049).[20] The savings are measured over the entire lifetime of commercial packaged boilers purchased in the 30-year analysis period. DOE quantified the energy savings attributable to each TSL as the difference in energy consumption between each standards case and the no-new-standards-case. The no-new-standards case represents a projection of energy consumption that reflects how the market for equipment would likely evolve in the absence of amended efficiency standards.

DOE uses its NIA spreadsheet models to estimate energy savings from potential amended standards. The NIA spreadsheet model (described in section IV.H of this document) calculates savings in site energy, which is the energy directly consumed by equipment at the locations where they are used. For electricity, DOE reports national energy savings (NES) in terms of primary energy savings, which is the savings in the energy that is used to generate and transmit the site electricity. For natural gas, the primary energy savings are considered to be equal to the site energy savings. DOE also calculates NES in terms of full-fuel-cycle (FFC) energy savings. The FFC metric includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and thus presents a more complete picture of the impacts of energy conservation standards. DOE's approach is based on the calculation of an FFC multiplier for each of the energy types used by covered products or equipment. For more information on FFC energy savings, see section IV.H.2 of this document.

2. Significance of Savings

To amend standards for commercial packaged boilers, DOE must determine that the standards would result in ''significant'' additional energy savings. (42 U.S.C. 6313(a)(6)(A)(ii)(II) and (C)(i)) Although the term ''significant'' is not defined in the Act, the U.S. Court of Appeals for the District of Columbia Circuit, in *Natural Resources Defense Council* v. *Herrington,* 768 F.2d 1355, 1373 (D.C. Cir. 1985), indicated that Congress intended ''significant'' energy savings in the context of EPCA to be savings that were not ''genuinely trivial.'' DOE concludes the energy savings for the amended standards (presented in section V.B.3 of this document) are ''significant'' as required by 42 U.S.C. 6313(a)(6)(A)(ii)(II) and (C)(i).

E. Economic Justification

1. Specific Criteria

EPCA provides seven factors to be evaluated in determining whether a potential energy conservation standard is economically justified. (42 U.S.C. 6313(a)(6)(B)(ii)(I)–(VII)) The following sections discuss how DOE has addressed each of those seven factors in this rulemaking.

a. Economic Impact on Manufacturers and Consumers

EPCA requires DOE to consider the economic impact of a standard on manufacturers and the consumers of the products subject to the standard. (42 U.S.C. 6313(a)(6)(B)(ii)(I)) In determining the impacts of a potential amended standard on manufacturers, DOE conducts a manufacturer impact analysis (MIA), as discussed in section IV.J of this document. DOE first uses an annual cash-flow approach to determine the quantitative impacts. This step includes both a short-term assessment—based on the cost and capital requirements during the period between when a regulation is issued and when entities must comply with the regulation—and a long-term assessment over a 30-year period. The industry-wide impacts analyzed include: (1) INPV, which values the industry based on expected future cash flows; (2) cash flows by year; (3) changes in revenue and income; and (4) other measures of impact, as appropriate. Second, DOE analyzes and reports the impacts on different types of manufacturers, including impacts on small manufacturers. Third, DOE considers the impact of standards on domestic manufacturer employment and manufacturing capacity, as well as the potential for standards to result in plant closures and loss of capital investment. Finally, DOE takes into account cumulative impacts of various DOE regulations and other regulatory requirements on manufacturers.

For individual consumers, measures of economic impact include the changes in LCC and PBP associated with new or amended standards. These measures are discussed further in the following section. For consumers in the aggregate, DOE also calculates the national NPV of the economic impacts applicable to a particular rulemaking. DOE also evaluates the LCC impacts of potential standards on identifiable subgroups of consumers that may be affected disproportionately by a national standard.

b. Savings in Operating Costs Compared To Increase in Price

EPCA requires DOE to consider the savings in operating costs throughout the estimated average life of the covered equipment in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered equipment that are likely to result from an amended standard. (42 U.S.C. 6313(a)(6)(B)(ii)(II)) DOE conducts this comparison in its LCC and PBP analysis.

The LCC is the sum of the purchase price of the equipment (including installation cost and sales tax) and the operating expense (including energy, maintenance, and repair expenditures) discounted over the lifetime of the equipment. The LCC analysis requires a variety of inputs, such as equipment prices, equipment energy consumption, energy prices, maintenance and repair costs, equipment lifetime, and discount rates appropriate for consumers. To account for uncertainty and variability in specific inputs, such as equipment lifetime and discount rate, DOE uses a distribution of values, with probabilities attached to each value. For its analysis, DOE assumes that consumers will purchase the covered equipment in the first year of compliance with amended standards.

The PBP is the estimated amount of time (in years) it takes consumers to

[20] DOE also presents a sensitivity analysis that considers impacts for equipment shipped in a 9-year period.

recover the increased purchase cost (including installation) of more-efficient equipment through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost due to a more stringent standard by the change in annual operating cost for the year that standards are assumed to take effect.

The LCC savings for the considered efficiency levels are calculated relative to a no-new-standards-case that reflects projected market trends in the absence of amended standards. DOE identifies the percentage of consumers estimated to receive LCC savings or experience an LCC increase, in addition to the average LCC savings associated with a particular standard level. DOE's LCC and PBP analysis is discussed in further detail in section IV.F of this document.

c. Energy Savings

EPCA requires DOE, in determining the economic justification of a standard, to consider the total projected energy savings that are expected to result directly from the standard. (42 U.S.C. 6313(a)(6)(B)(ii)(III)) As discussed in section III.D.1 and section IV.E of this document and chapter 10 of the final rule TSD, DOE uses spreadsheet models to project national energy savings.

d. Lessening of Utility or Performance of Equipment

In determining whether amending a standard is economically justified, DOE evaluates any lessening of the utilities or performance of the considered equipment. (42 U.S.C. 6313(a)(6)(B)(ii)(IV)) Based on data available to DOE, the standards adopted in this document do not reduce the utility or performance of the equipment under consideration in this rulemaking. See section IV.A.3 and section IV.B for DOE's detailed determinations that adopted standards in this final rule do not reduce utility or performance of CBP equipment covered under this rulemaking.

e. Impact of Any Lessening of Competition

EPCA directs DOE to consider the impact of any lessening of competition, as determined in writing by the Attorney General of the United States that is likely to result from a standard. (42 U.S.C. 6313(a)(6)(B)(ii)(V)) DOE transmitted a copy of its proposed rule to the Attorney General with a request that the Department of Justice (DOJ) provide its determination on this issue. On October 19, 2015, DOJ provided its determination to DOE that the amended standards for commercial packaged boilers are unlikely to have a significant adverse impact on competition. DOE has included this determination from DOJ at the end of this rule.

f. Need for National Energy Conservation

In considering new or amended energy conservation standards, EPCA also directs DOE to consider the need for the national energy conservation. (42 U.S.C. 6313(a)(6)(B)(ii)(VI)) The adopted standards are likely to improve the security and reliability of the Nation's energy system. Reductions in the demand for electricity also may result in reduced costs for maintaining the reliability of the Nation's electricity system. DOE conducts a utility impact analysis to estimate how standards may affect the Nation's needed power generation capacity, as discussed in section IV.M of this document.

The adopted standards also are likely to result in environmental benefits in the form of reduced emissions of air pollutants and greenhouse gases (GHGs) associated with energy production and use. DOE conducts an emissions analysis to estimate how standards may affect these emissions, as discussed in section IV.K of this document. DOE reports the emissions impacts from each TSL it considered in section V.B.6 of this document. DOE also estimates the economic value of emissions reductions resulting from the considered TSLs, as discussed in section IV.L of this document.

g. Other Factors

In determining whether an energy conservation standard is economically justified, DOE may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6313(a)(6)(B)(ii)(VII)) To the extent interested parties submit any relevant information regarding economic justification that does not fit into the other categories described above, DOE could consider such information under ''other factors.''

2. Rebuttable Presumption

EPCA creates a rebuttable presumption that an energy conservation standard is economically justified if the additional cost to the consumer of the equipment that meets the standard is less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable DOE test procedure. DOE's LCC and PBP analyses generate values used to calculate the effects that amended energy conservation standards would have on the PBP for consumers. These analyses include, but are not limited to, the 3-year PBP contemplated under the rebuttable-presumption test.

In addition, DOE routinely conducts an economic analysis that considers the full range of impacts to consumers, manufacturers, the Nation, and the environment, as required under 42 U.S.C. 6313(a)(6)(B)(ii) and (C)(i). The results of this analysis serve as the basis for DOE's evaluation of the economic justification for a potential standard level (thereby supporting or rebutting the results of any preliminary determination of economic justification). The rebuttable presumption payback calculation is discussed in section V.B.1.c of this document.

F. General Comments

1. Proposed Standard Levels

In response to the efficiency levels proposed in the March 2016 NOPR (NOPR TSL 2), DOE received numerous comments on the appropriate levels for selection as the Federal standards.

a. Comments on Proposed TSL 2

The Joint Utilities expressed their support for the proposed standard levels (*i.e.,* NOPR TSL 2). (Joint Utilities, No. 66 at p. 1)

BHI, Weil-McLain, and Lochinvar opposed the proposed standard levels at NOPR TSL 2, and Lochinvar encouraged DOE to make no change to the minimum efficiency standard. (BHI, No. 71 at p. 1; Weil-McLain, No. 67 at pp. 4–5; Lochinvar, No. 70 at p. 8)

BHI expressed concern that commercial packaged boilers meeting the efficiency levels proposed in the March 2016 NOPR for small gas-fired hot water (SGHW) and large gas-fired hot water (LGHW) equipment classes (85-percent E_T and 85-percent E_C, respectively) cannot be safely vented using a conventional ''category I'' chimney. (BHI, No. 71 at p. 2) Raypak added that the category I venting commercial packaged boilers must be retained to allow replacement of boilers from old installations. (Raypak, No. 72 at p. 3) Raypak also expressed concern that the proposed TSL 2 is too close to condensing and could lead to failure of B-vent pipes and leaking combustion equipment.

Raypak suggested that DOE selected the proposed efficiency levels because higher efficiency standards exist in Europe. Raypak noted that the regulations governing boiler maintenance in Europe are substantially different, and that some countries require annual boiler inspections and service, which are not required in the United States. Raypak argued that DOE

should not set standards at the levels proposed in the March 2016 NOPR until maintenance practices in the United States are comparable to those in other countries. Raypak further stated that the complexity of newer technology requires installers who are skilled and experienced to install higher efficiency commercial packaged boilers. (Raypak, No. 72 at p. 3)

Weil-McLain expressed concern that the proposed levels included in the NOPR TSL 2 would significantly reduce the non-condensing options available to consumers. Weil-McLain also added that DOE would erase a future increase in efficiency that was to take effect in 2022 pursuant to 10 CFR 431.87(c), noting that manufacturers' ability to make long-term development plans are impacted when efficiency requirements are obsoleted before they have even gone into effect. (Weil-McLain, No. 67 at pp. 2–3) Both Weil-McLain and BHI suggested that the proposed levels could reduce their ability to sell non-condensing commercial packaged boilers, and therefore would create a significant burden on manufacturers. (Weil-McLain, No. 67 at pp. 4–5; BHI, No. 71 at p. 1) BHI further commented that adopting NOPR TSL 2 would potentially reduce employment at their facilities. (BHI, No. 71 at p. 1) The Gas Associations urged DOE to revise the technical analysis and economic justification for the 85-percent level proposed in the March 2016 NOPR. The Gas Associations expressed concern about issues with possible condensation in the venting system and interior heat exchanger leading to premature failure and believe that the current standards are sufficient and justified. (Gas Associations, No. 69 at p. 2)

SoCalGas and AHRI recommended that DOE adopt NOPR TSL 1. (SoCalGas, No. 77 at p. 4; AHRI, No. 76 at pp. 27, 44) SoCalGas argued that the changes to test procedure may impact efficiency ratings, and noted that if a 1 percent decrease in ratings were to occur as a result of the test procedure changes, the result would be effectively requiring an 86-percent E_T for SGHW commercial packaged boilers. SoCalGas cited DOE's own analysis demonstrating that there are very few commercial packaged boilers on the market meeting the 86-percent E_T level. (SoCalGas, No. 77 at p. 3) AHRI also stated that, based on DOE's analysis, it should not adopt a standard more stringent than the proposed TSL 2 in all equipment classes, because the increase in incorrect venting and other installation decisions should prohibit consideration of near-condensing efficiency levels. (AHRI, No. 76 at p. 27) AHRI and Raypak stated that forcing consumers to buy near-condensing and condensing boilers in circumstances where they are not warranted for installation is a perversion of the regulatory process. (AHRI, No. 76 at p. 27; Raypak, No. 72 at p. 2)

ABMA commented that the proposed levels included in NOPR TSL 2 for the LGHW and LOHW equipment classes (*i.e.,* 85-percent E_C and 88-percent E_C) would be unattainable for certain sizes of commercial packaged boilers in its members' equipment lines and recommended that DOE adopt standards at 83 percent and 86 percent, respectively. (ABMA, No. 64 at p. 2)

Bradford White and Raypak recommended that DOE adopt a minimum standard of 82-percent E_T for the SGHW equipment class. For the LGHW equipment class, Bradford White recommended DOE select 84-percent E_C, while, Raypak recommended 82-percent E_C. (Bradford White, No. 68 at p. 4; Raypak, No. 72 at p. 4)

Bradford White stated that the proposed level of 85-percent E_C for LGHW commercial packaged boilers forces the use of such equipment in applications where it may not make sense. Bradford White added that equipment with a combustion efficiency of approximately 85 to 88 percent in use today is a result of contractors consciously determining such equipment is appropriate for each respective installation. Bradford White stated that the proposed level of 85-percent E_C for LGHW commercial packaged boilers forces the use of such equipment in inappropriate applications and noted that changing out the vent system may not be possible in these installations. (Bradford White, No. 68 at p. 3)

In view of the preceding stakeholder comments about TSLs, DOE notes that DOE is required to set a standard that achieves significant additional energy savings that is determined to be technologically feasible and economically justified. In making such a determination, DOE must consider, to the maximum extent practicable, the benefits and burdens based on the seven criteria described in EPCA (see 42 U.S.C. 6313(a)(6)(B)(ii)(I)–(VII)). DOE's weighing of the benefits and burdens based on the final rule analysis and rationale for the TSL selection is discussed in section V and in detail in appendix 10C of the final rule TSD. DOE notes that much of the commentary regarding the selection of TSL levels for the standards is based on more detailed comments regarding specific portions of the final rule analysis. These comments related to specific analyses are addressed within the specific analysis section to which they pertain.

DOE also disagrees with Raypak's comments that the proposed standards were based on the standards applicable in Europe. Although DOE researches international energy efficiency regulations in the context of its market assessment, the standard levels that were proposed in the March 2016 NOPR, and those that are adopted in this final rule are not determined based on international regulations. Rather, DOE selects standard levels by weighing the benefits and burdens of each TSL to ensure that the standards save a significant additional amount of energy and are technologically feasible and economically justified, as required by EPCA. (42 U.S.C. 6313(a)(6)(A)(ii)(II) and (C)(i))

In addition, Bradford White questioned the selection of TSL 2 due the fact that it does not meet the rebuttable presumption payback of three years, and therefore would place a significant burden on consumers. (Bradford White, No. 68 at p. 4)

DOE notes that the 3-year payback period is contemplated under the rebuttable presumption test. However, DOE routinely conducts a full economic analysis that considers the full range of impacts, including those to the consumer, manufacturer, Nation and environment, and the results of this economic analysis are what serve as the basis for DOE to definitively evaluate the economic justification for a standard level. As detailed in section IV and section V of DOE's full economic analysis for this final rule document, DOE concludes based on clear and convincing evidence that the benefits of amended standards at TSL 2 outweigh the burdens, and the standards at TSL 2 are economically justified.

b. Comments on TSL 3

The Joint Advocates urged DOE to adopt NOPR TSL 3, noting that TSL 3 was found to be cost effective for purchasers and would more than double the national energy savings achieved by NOPR TSL 2. (Joint Advocates, No. 74 at p. 1) ASAP also suggested DOE should consider adopting NOPR TSL 3. (ASAP, Public Meeting Transcript, No. 61 at pp. 14–15) Weil-McLain, ABMA, and AHRI opposed the adoption of NOPR TSL 3. (Weil-McLain, No. 67 at p. 9; ABMA, No. 64 at p. 3; AHRI, No. 76 at pp. 1, 27, 44) Bradford White expressed the belief that the estimated gains of the SGHW equipment class at NOPR TSL 3 (*i.e.,* at 95-percent E_T) were overstated in DOE's analysis, and noted that the market is voluntarily moving towards products with efficiencies in

excess of 90-percent E_T. (Bradford White, No. 68 at p. 3)

DOE considered the comments received in response to the consideration for TSL 3 as proposed in the March 2016 NOPR. However, based on DOE's updated analyses and the results presented in this final rule (see section V), TSL 3 is no longer economically feasible. Therefore, for the reasons discussed in section V.C.1, DOE has rejected TSL 3.

c. Other Comments

SoCalGas expressed concerns that the results of a SoCalGas modified LCC analysis shows a potentially significant burden to California and SoCalGas consumers, in particular regarding the LGHW equipment class, but acknowledged limitations to their analysis and filtering of the CBECS dataset. (SoCalGas, No. 77 at p. 4)

Nussbaum requests clarity on whether DOE's regulations are intended to remove enforcement from existing authorities, stating that California Energy Commission's interpretation is that DOE has taken over all enforcement related to efficiency. He further states that without state and local enforcement of efficiency, it will be sacrificed in order to achieve low NO_X requirements since in California emissions requirements are enforced. (Nussbaum, No. 60 at p. 1)

In response, DOE notes that while the SoCalGas analysis shows a small decline in the cost effectiveness (*i.e.,* LCC savings) of small gas-fired hot water equipment at certain efficiency levels, it showed an increase in the LCC savings at other levels relative to DOE's analysis. While the analysis did show negative LCC savings for the large gas-fired hot water equipment class at all efficiency levels, the approach taken in modifying the model to only look at a relatively small sample of buildings in the combined San Francisco and Los Angeles climate regions, may allow for a substantial uncertainty in the LCC results obtained for those regions. DOE's analysis focuses on the national costs and benefits obtained, as befitting development of National standards. Regarding the comment submitted by Nussbaum, under EPCA DOE has authority to establish and regulate minimum efficiency for commercial packaged boilers as measured under a standardized test procedure, but DOE recognizes that performance in the field can vary based on installation conditions, set-up, and maintenance.

2. Statutory Requirements

AHRI pointed out that EPCA's requirements in 42 U.S.C. 6295(o)(2) for DOE to achieve the maximum improvement in energy efficiency in its energy conservation standards rulemakings do not apply to commercial packaged boilers. Therefore, AHRI suggested that DOE's entire analysis is predicated on a fundamental flaw because it reflects an analysis that blatantly disregards the crucial flexibility that DOE has to more fully consider negative impacts on industry, particularly on small business and job loss. (AHRI, No. 76 at p. 6)

DOE agrees that EPCA does not require DOE to select the standard level that provides the maximum improvement in energy savings for commercial packaged boilers. However, as discussed in section II.A, an amended CPB standard must be designed to achieve significant additional energy conservation and be technologically feasible and economically justified. (42 U.S.C. 6313(a)(6)(A)(ii)(II) and (C)(i)) It is in DOE's discretion to adopt amended standards at any level that meet these legal criteria. DOE does not base its rulemaking solely on achieving maximum energy efficiency improvements as claimed by the stakeholders. In making the determination of economic justification of an amended standard, DOE considers, to the maximum extent practicable, the benefits and burdens of an amended standard based on the seven criteria described in EPCA, which include the economic impact of the standard on manufacturers. (See 42 U.S.C. 6313(a)(6)(B)(ii)(I)–(VII).) In considering both the standards proposed in the March 2016 NOPR and those being adopted in this final rule, DOE fully addressed EPCA's requirements in 42 U.S.C. 6313(a)(6)(B)(ii)(I)–(VII), including economic impact of the amended standards on manufacturers and small businesses. A discussion of DOE's weighting of the benefits and burdens based on these factors is contained in section V of this final rule. With regard to the specific comments on impact on manufacturers and employment impacts, DOE has considered these impacts, and they are discussed in V.B of this final rule. The differential impacts for small business manufacturers are discussed in section VI.B.

AHRI and Spire commented that DOE's CPB ECS rulemaking does not meet EPCA's requirement for clear and convincing evidence prescribed in 42 U.S.C. 6313 (a)(6)(A)(ii)(II), because DOE failed to provide reasonable basis for its analyses, such as its unsupported assumptions for venting costs and the fundamental energy use of commercial packaged boilers. AHRI further stated that this burden of proof is met only if evidence ''instantly tilted the evidentiary scales'' when viewed in light of alternative information. *Colorado* v. *New Mexico,* 467 U.S. 310, 316 (1984). By asking the stakeholders to substantiate its assumptions and by initiating a rulemaking amending ASHRAE standards without meeting the burden of proof requirements, AHRI argues that DOE impermissibly shifted the agency's burden of production onto the stakeholders. (AHRI, No. 76 at p. 7; Spire, No. 73 at pp. 6–8, 10)

DOE notes that it is adopting these standards pursuant to 42 U.S.C. 6313(a)(6)(C)(i)(II), which requires DOE to issue new standards based on ''the criteria and procedures established under subparagraph (B).'' In relevant part, subparagraph (B) specifies that: (1) In making a determination of economic justification, DOE must consider, to the maximum extent practicable, the benefits and burdens of an amended standard based on the seven criteria described in EPCA; (2) DOE may not prescribe any standard that increases the energy use or decreases the energy efficiency of a covered product; and (3) DOE may not prescribe any standard that interested persons have established by a preponderance of evidence is likely to result in the unavailability in the United States of any product type (or class) of performance characteristics (including reliability, features, sizes, capacities, and volumes) that are substantially the same as those generally available in the United States. (42 U.S.C. 6313(a)(6)(B)(ii)–(iii))

Importantly, subparagraph (B) does not mention clear and convincing evidence. What is more, multiple features of the statutory text indicate that a rule establishing standards under subparagraph (C)(i)(II) need not be based on clear and convincing evidence.[21] But

[21] To explain, the reference to ''criteria and procedures established under subparagraph (B)'' is not best read as encompassing a ''clear and convincing evidence'' threshold. For that phrase appears in subparagraph (A), not subparagraph (B), and therefore it is not a criterion or procedure ''established under subparagraph (B).'' Subparagraph (B) does mention subparagraph (A), but not in a manner that incorporates subparagraph (A) by reference; rather, subparagraph (B) says the criteria and procedures it establishes are to be used *in* subparagraph (A)(ii)(II). Subparagraph (C)(i)(II) says the subparagraph (B) criteria and procedures are also to be used in a subparagraph (C)(i)(II) decision. It does not follow—logistically or linguistically—that such a decision must also incorporate an evidentiary threshold that is used in a different type of decision to which subparagraph (B) also applies.

In addition, subsection (a) includes multiple cross-references to various paragraphs, subparagraphs, clauses, and subclauses. See, *e.g.,* 42 U.S.C. 6313(a)(5)(A); 6313(a)(5)(G);

Continued

assuming that clear and convincing evidence is required here, DOE believes its findings fully satisfy that threshold. To explain that conclusion, DOE articulates how it understands the ''clear and convincing evidence'' concept to operate in the context of DOE's setting energy conservation standards. Commenters referred to the context of litigation, where ''clear and convincing'' means that the evidence must ''place in the ultimate factfinder an abiding conviction that the truth'' of its conclusions is ''highly probable.'' [22] At the same time, to satisfy the ''clear and convincing'' standard of proof, a litigant need not eliminate all possible doubt, or even all reasonable doubt; ''clear and convincing'' is an intermediate standard that is less stringent than the ''beyond all reasonable doubt'' threshold required for a criminal conviction.

DOE fully recognizes that whenever it must have ''clear and convincing evidence'' pursuant to subclause (A)(i)(II), it needs a higher degree of confidence in its conclusions than would be required under the ''preponderance'' standard that ordinarily applies in an agency rulemaking. In such matters, the administrative record, taken as a whole, must justify DOE in a strong conviction that its conclusions are highly likely to be correct.

However, some commenters appear to think that the ''clear and convincing'' threshold would preclude DOE from using its expert judgment to make predictions. That would not be the case in litigation; a ''clear and convincing evidence'' standard of proof does not restrict the type, quality, or nature of evidence, including expert opinions that can be used. Moreover, a standards-setting rulemaking is not a litigation, and the differences warrant some differences in how the ''clear and convincing evidence'' threshold operates. DOE both develops the record and reviews it to make findings. Also, as an agency tasked with setting policy, DOE is ordinarily expected to use its predictive judgment. The text of paragraph (6) is consistent with that notion. Subparagraph (B), which describes various factors that DOE is to consider in making a subclause (A)(i)(II) decision for which it would need clear and convincing evidence, repeatedly calls for predictive judgments. DOE is to forecast the likely energy savings of a standard, the economic costs and benefits of the standard, and other future effects. By their nature, these assessments cannot be instantly determined to be correct. Rather, DOE believes ''clear and convincing evidence'' would mean that DOE must be strongly convinced that its forecasts are highly likely to be reasonable forecasts given current conditions and information.

In sum, for purposes of setting standards under paragraph (a)(6), ''clear and convincing evidence'' can include the same sorts of evidence and analysis that DOE would use in any other standards rulemaking. But DOE will conclude it has ''clear and convincing evidence'' only when it is strongly convinced that it is highly likely to have reached appropriate findings. With respect to the findings discussed in this rulemaking, DOE does have that strong conviction, well placed given the record as a whole.

Spire further commented that the NOPR was issued without remotely sufficient information and analysis to justify adoption of the standards proposed and that key information and analysis underlying it has yet to be disclosed so that it can be exposed to potential refutation through comment, and as such the NOPR is inadequate to satisfy notice and comment requirements, and should therefore be withdrawn.

Under the notice-and-comment or informal rulemaking provisions of the Administrative Procedure Act, DOE must publish in the **Federal Register** a notice of proposed rulemaking that includes: (1) A statement of the time, place, and nature of the public rulemaking proceedings; (2) a reference to the legal authority under which the rule is proposed; and (3) either the terms or substance of the proposed rule or a description of the subjects and issues involved. (5 U.S.C. 553(b)) DOE must then allow interested parties an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation. (5 U.S.C. 553(c)) On March 24, 2016, DOE published a NOPR and notice of public meeting in the **Federal Register** that met the requirements under 5 U.S.C. 553(b). DOE also provided the public an opportunity to present oral and written data, views, and arguments on the March 2016 CPB ECS NOPR.

IV. Methodology and Discussion of Related Comments

This section addresses the analyses DOE has performed for this rulemaking with regard to commercial packaged boilers. Separate subsections address each component of DOE's analyses.

DOE used three analytical tools to estimate the impact of the standards. The first tool is a spreadsheet that calculates the LCC savings and PBP of potential amended energy conservation standards. See section IV.F and chapter 8 of final rule TSD for details of the LCC and PBP spreadsheet tool. The second tool is a Microsoft Excel spreadsheet that calculates national energy savings and net present value resulting from potential amended energy conservation standards. More details of this spreadsheet tool can be found in section IV.H and chapter 10 of the final rule TSD. The third spreadsheet tool, the Government Regulatory Impact Model (GRIM), helps DOE to assess manufacturer impacts of potential standards. See section IV.J and chapter

6313(a)(6)(A)(ii)(I). Consistent with the ordinary scheme of cross-references, see House Legislative Counsel's Manual on Drafting Style, HLC No. 104–1, p. 24 (1995); Senate Office of the Legislative Counsel, Legislative Drafting Manual 10 (1997), in each of these cross-references a ''subparagraph'' reference is to an item labeled with a capital letter (such as ''subparagraph (B)''). Given the careful construction of the network of cross-references in subsection (a), it would be unusual for ''established under subparagraph (B)'' to sweep in an evidentiary standard stated in text other than subparagraph (B).

DOE also notes that clause (C)(i) contains two cross-references. Subclause (I), addressing one decision DOE might make, mandates that it be based on ''the criteria established under subparagraph (A).'' Subclause (II), addressing the decision DOE is making in this rulemaking, refers to ''the criteria and procedures established under subparagraph (B).'' By interpreting the latter phrase not to encompass ''clear and convincing evidence,'' DOE appropriately gives significance to this difference in language. Evidently ''the criteria established under subparagraph (A)'' are different from the ''the criteria established under subparagraph (B)''; were they the same criteria, there would have been no need to use different cross-references. ''Clear and convincing evidence'' is in (A), not (B).To the extent there is ambiguity in paragraph (a)(6) about whether DOE must have clear and convincing evidence to establish an amended standard under subparagraph (C), DOE believes its approach is consistent with the purposes of subparagraph (C). That is to say, the intent of paragraph (6) is to include ASHRAE in the standards-developing process. ASHRAE maintains standards that achieve energy conservation with respect to the products to which paragraph (6) applies, and ASHRAE is expected to update those standards as technology and markets evolve over time. When ASHRAE has acted in a timely fashion, DOE is to reflect ASHRAE's standards in its own standards, unless it has clear and convincing evidence justifying more stringent standards (on the terms of subclause (A)(i)(II)). However, the statute directs DOE to review its standards every six years—in case ASHRAE has not acted. This six-year review encourages ASHRAE to keep its standards up to date, because if it has recently amended its standards (and triggered DOE to follow), DOE will not need to engage in its independent standards revision. But, if ASHRAE has not revisited its standards for some while, DOE's six-year review provides an occasion on which DOE might adopt more stringent standards, without being tied to the ASHRAE standards. By not imposing the ''clear and convincing'' threshold for such a rulemaking, the statute encourages ASHRAE to continually update its standards. In short, a common-sense approach to the purposes of subparagraph (C) aligns with the above careful textual reading.

[22] *Colorado* v. *New Mexico,* 467 U.S. 310, 316 (1984).

12 of the final rule TSD. In addition, these tools are available on the DOE website for this rulemaking: *http://www.regulations.gov/docket?D=EERE-2013-BT-STD-0030.*

Additionally, DOE used output from the 2016 version of the Energy Information Administration's (EIA's) *Annual Energy Outlook* (*AEO*) for the emissions and utility impact analyses.

A. Market and Technology Assessment

1. General

For the market and technology assessment, DOE develops information that provides an overall snapshot of the market for the equipment considered, including the nature of the equipment, market characteristics, industry structure, and technologies that improve energy efficiency. DOE divides the market and technology assessment broadly into two categories: (1) Market assessment and (2) technology assessment. The purpose of the market assessment is to develop a qualitative and quantitative characterization of the CPB industry and market structure, based on information that is publicly available as well as data submitted by manufacturers and other interested parties. Issues addressed include CPB characteristics (gathered from market databases and literature), market share and equipment classes; existing regulatory and non-regulatory efficiency improvement initiatives; models currently available and their distribution with respect to efficiency and rated input in each equipment class. The purpose of the technology assessment is to investigate technologies currently used in commercial packaged boilers, and identify those that will improve the energy efficiency of commercial packaged boilers. The technology assessment results in a preliminary list of technology options that can improve the thermal and/or combustion efficiency of commercial packaged boilers. Chapter 3 of the final rule TSD contains all the information related to the market and technology assessment. The chapter also provides additional details on the methodology used, information gathered, and results. DOE typically uses the information gathered in this chapter in the various downstream analyses such as engineering analysis, shipment analysis, and manufacturer impact analyses.

For this final rule, DOE explored the market to identify manufacturers of commercial packaged boilers. As per the definition set forth in 10 CFR 431.82, a manufacturer of a commercial packaged boiler is any entity that: (1) Manufactures, produces, assembles, or imports a commercial packaged boiler in its entirety; (2) manufactures, produces, assembles, or imports a commercial packaged boiler in part, and specifies or approves the boiler's components, including burners or other components produced by others, as for example by specifying such components in a catalogue by make and model number or parts number; or (3) is any vendor or installer who sells a commercial packaged boiler that consists of a combination of components that is not specified or approved by a person described in the two previous parts of this definition.

Through extensive search of publicly available information, including DOE's Compliance Certification Database [23] and ABMA's and AHRI's websites, DOE identified 46 unique parent companies that manufacture CPB equipment. The complete list of manufacturers can be found in chapter 3 of the final rule TSD.

In the NOPR analysis, DOE relied on equipment listing data from AHRI and other public sources and requested comment on any manufacturers of CPB equipment that were not represented in this analysis. Bradford White recommended that DOE review the paid research reports, included in research from BRG Building Solutions to identify manufacturers that are neither members of AHRI nor ABMA.[24] (Bradford White, No. 68 at p. 4)

For the final rule, DOE's market analysis is primarily based on the Compliance Certification Database. The Compliance Certification Database houses certification reports and compliance statements submitted by manufacturers for covered equipment and equipment subject to Federal conservation standards. Manufacturers of all covered equipment are required to submit a certification report before a basic model is distributed in commerce. The Compliance Certification Database includes only certification records of current basic models that have been submitted to DOE in the past year. Thus, this database should provide the most comprehensive list of manufacturers actively selling commercial packaged boilers in the United States. However, DOE also surveyed the market to identify manufacturers that are not included in the Compliance Certification Database, but that appear to be actively selling CPB models. DOE reviewed AHRI and ABMA member manufacturers, and also searched publicly available information to identify several manufacturers who are neither members of AHRI nor ABMA. Through these information sources, DOE concludes it has generated a complete picture of the CPB market and manufacturers, and, thus, did not require the report suggested by Bradford White. The models offered by all manufacturers that DOE identified in this rulemaking characterize the market for commercial packaged boilers in the market and technology assessment (chapter 3 of the final rule TSD).

2. Scope of Coverage

EPCA lists ''packaged boilers'' as a type of covered equipment. (42 U.S.C. 6311(1)) EPCA defines the term ''packaged boiler'' as ''a boiler that is shipped complete with heating equipment, mechanical draft equipment, and automatic controls; usually shipped in one or more sections.'' (42 U.S.C. 6311(11)(B))

In the 2016 CPB TP final rule, DOE consolidated various definitions related to commercial packaged boilers by revising its definitions for ''packaged boiler'' and ''commercial packaged boiler'' at 10 CFR 431.82, and removing the definitions for ''packaged low pressure boiler'' and ''packaged high pressure boiler.'' The definition for ''packaged boiler'' adopted by DOE in the 2016 CPB TP final rule is essentially the same as EPCA's definition, but clarifies that if the boiler is shipped in more than one section, the sections may be produced by more than one manufacturer, and may be originated or shipped at different times and from more than one location. DOE updated the definition of a ''commercial packaged boiler'' to define the term as a packaged boiler that meets all of the following criteria: (1) Has a rated input of 300,000 Btu/h or greater; (2) is distributed in commerce for space conditioning and/or service water heating in buildings but does not meet the definition of ''hot water supply boiler''; (3) does not meet the definition of ''field-constructed''; and (4) is designed to, or is operated at a steam pressure of at or below 15 psig or a water pressure at or below 160 psig and water temperature of 250 °F. 81 FR 89276, 89279–89280 (December 9, 2016). DOE also adopted a related definition for ''field-constructed.''

As noted above, the definition of ''packaged boiler'' refers to a boiler that is shipped complete with heating

[23] DOE's Compliance Certification Database houses certification reports and compliance statements submitted by manufacturers for covered products and equipment subject to Federal conservation standards. *http://energy.gov/eere/buildings/implementation-certification-and-enforcement.*

[24] BRG Building Solutions is a global consultancy that provides market data for various construction, building products, and utility industries, including heating and ventilation products. *www.brgbuildingsolutions.com/.*

equipment, mechanical draft equipment, and automatic controls. Although, the definition does not explicitly include natural draft equipment, DOE concluded in the August 2015 withdrawal notice that natural draft commercial packaged boilers are and have been covered equipment subject to DOE's energy conservation standards for commercial packaged boilers. 80 FR 51487. Accordingly, DOE proposed amended energy conservation standards in the March 2016 NOPR that are applicable to natural draft commercial packaged boilers, and has likewise included natural draft commercial packaged boilers in the analysis for this final rule and adopts standards that are applicable to this equipment.

3. Equipment Classes

When evaluating and establishing energy conservation standards, DOE typically divides covered equipment into equipment classes based on the type of energy used, capacity, or performance-related features that justify a different standard. In making a determination whether a performance-related feature justifies a different standard, DOE considers such factors as the utility to the consumer of the feature and other factors DOE determines are appropriate. The current regulations for commercial packaged boilers list 10 equipment classes with corresponding energy efficiency standards for each.[25] 10 CFR 431.87. These equipment classes are based on (1) size (rated input), (2) heating media (hot water or steam), and (3) type of fuel used (oil or gas).[26] The gas-fired steam commercial packaged boilers are further classified according to draft type. In the March 2016 NOPR, DOE proposed to consolidate CPB equipment classes that are currently divided by draft type.[27] Specifically, DOE proposed to combine the small (≥300,000 Btu/h and ≤2,500,000 Btu/h), gas fired—all except natural draft, steam and small (≥300,000 Btu/h and ≤2,500,000 Btu/h), gas fired—natural draft, steam classes; and the large (>2,500,000 Btu/h and ≤10,000,000 Btu/h), gas fired—all except natural draft, steam and large (≥2,500,000 Btu/h and ≤10,000,000 Btu/h), gas fired—natural draft, steam classes from four equipment classes to two equipment classes: (1) Small (≥300,000 Btu/h and ≤2,500,000 Btu/h), gas-fired steam; and (2) large (>2,500,000 Btu/h and ≤10,000,000 Btu/h), gas-fired steam. 81 FR 15852.

The Joint Advocates and Bradford White supported DOE's reconfiguration of the equipment classes to eliminate draft type as a distinguishing feature. (Joint Advocates, No. 74 at p. 2; Bradford White, No. 68 at p. 4) The Joint Advocates added that natural draft boilers provide no distinct performance-related utility. (Joint Advocates, No. 74 at p. 2)

Weil-McLain, Spire, the Gas Associations, and BHI requested that DOE establish separate equipment classes for natural draft and mechanical draft commercial packaged boilers, noting that the ability to utilize natural draft in installations provides consumers with utility. (Weil-McLain, No. 67 at p. 6; BHI, No. 71 at pp. 14–15; Spire, No. 73 at p. 11; Gas Associations, No. 69 at p. 4; Crown, Public Meeting Transcript, No. 61 at p. 159) BHI stated that loss of the ability to use Category I venting (suitable for non-condensing boilers) is a loss in utility because the circumstances of many real world installations offer no practical alternatives to Category I venting. BHI argued that providing heat and hot water are not the only utility functions, features, and performance characteristics of boilers, and that designs that allow proper installation in a variety of cases are a critical aspect of utility so that such equipment can be installed and used safely. In addition, BHI stated that there is a point at which increasing installation costs become large enough to effectively create a ''loss of utility,'' and this situation in the real world is as likely to ''result in the unavailability'' of appropriate Category I boilers as a pure design issue. Further, BHI adds that DOE overstated the availability and utility of 85-percent gas-fired hot water boilers, particularly 85-percent atmospheric boilers in its screening analysis. BHI suggests that the adoption of 85-percent gas-fired hot water standard will leave many consumers with no cost effective option for replacement boiler and could lead to safety issues due to problems in venting system. BHI stated that this is a direct violation of the ''safe harbor rule.'' (BHI, No. 71 at pp. 4, 13–15) Spire also suggested that easy installation to existing natural draft venting systems should qualify as a unique utility of natural draft units and therefore should be preserved under 42 U.S.C. 6313(a)(6)(B)(i)(IV). Spire noted that DOE has recognized this fact in its decision to maintain separate equipment classes for ''space-constrained'' heat pumps and air conditions. (Spire, No. 72, at pp. 10–12) Raypak commented that DOE should not assume that all boiler installations will be capable of handling new installations at the amended efficiencies proposed in the March 2016 NOPR. They add that half of the commercial buildings were built before 1980 and when these boilers need to be replaced, it may not be possible to install an 85-percent efficient boiler in its place. Raypak further states that the category I boilers must be retained for such replacement scenarios. (Raypak, No. 72 at p. 3)

DOE maintains its position explained in the March 2016 NOPR and reiterates that the utility derived by consumers from commercial packaged boilers is in the form of the space heating function that a boiler performs, rather than the type of venting the boiler uses. Boilers requiring Category I or Category IV venting are capable of providing the same heating function to the consumer, and, thus, provide the same utility with respect to their primary function. DOE does not consider reduced costs associated with Category I venting in certain installations as a utility to the consumer, and also disagrees with BHI's assertion that there is a point at which the installation costs get so prohibitively expensive that they create a loss of utility to the consumer. Instead, the expenses associated with venting requirements are considered as an economic impact on consumers in the rulemaking's cost-benefit analysis and ultimately the analysis determines if the cost is economically prohibitive. Details regarding installation costs can be located in section IV.F.2. Further, DOE maintains that this final rule is not in violation of ''safe harbor'' rule because it does not result in the unavailability of any covered product class of performance characteristics (including reliability, features, sizes, capacities and volumes) that are substantially the same as those currently available. 42 U.S.C. 6313(a)(B)(iii)(II)(aa) DOE does not consider the type of venting to be a ''feature'' that would provide utility to consumers; instead DOE properly accounts for the economic benefits of the venting type in the economic analysis. Further, with regard to issues of safety in venting and incorrect

[25] These standard levels were adopted in the July 2009 final rule. 74 FR 36312 (July 22, 2009).

[26] Under subpart E of 10 CFR part 431, commercial packaged boilers are divided into equipment classes based on rated input (*i.e.,* size category). Throughout this document, DOE refers to units with a rated input of ≥300,000 Btu/h and ≤2,500,000 Btu/h as ''small'' and units with a rated input of >2,500,000 Btu/h as ''large.'' *See* 10 CFR 431.87.

[27] Because DOE is not adopting amended standards for commercial packaged boilers with rated inputs above 10,000,000 Btu/h, the standards for equipment in this class will remain unchanged. Thus, although DOE is consolidating this equipment into a single class, an allowance will still be made for natural draft units to have a lower minimum efficiency until March 2, 2022, as is allowed under the current standards.

installation, DOE notes that there is equipment that is currently installed in commercial buildings that meets or exceeds the amended standards established in this final rule. Manufacturers will also have sufficient time after the publication of this final rule and before the compliance date to revise their installation and operation manuals of their compliant equipment or to train contractors on installation of equipment that requires a change of the venting system.

In the March 2016 NOPR, DOE tentatively decided to classify commercial packaged boilers with rated input greater than 10,000 kBtu/h into separate equipment classes and not amend energy conservation standards for those classes because of regulatory complexities and lack of sufficient data to justify amended standards. 81 FR 15851–15853. Specifically, DOE noted that commercial packaged boilers with rated input greater than 10,000 kBtu/h are generally engineered-to-order, have very low shipment volumes as compared to other equipment classes with lower rated input, and have limited potential for significant additional energy savings. These factors, combined with a lack of information on pricing, shipments, and rated efficiency, led DOE to not propose amended energy conservation standards for very large commercial packaged boilers; however, the current efficiency standards applicable for the large CPB equipment classes remain applicable to the very large CPB equipment classes.

In response to these proposed amendments, Bradford White and ABMA expressed support for the introduction of the ''Very Large'' equipment classes. (Bradford White, No. 68 at p. 4; ABMA, No. 64 at p. 1) However, ABMA requested DOE to place a capacity limit on this rulemaking. (ABMA, No. 64 at p. 1) Raypak expressed support for not increasing the efficiency standard for very large commercial packaged boilers. (Raypak, No. 72 at p. 4) ABMA also noted that very large commercial packaged boilers are generally custom-built, and obtaining realistic prices for such equipment will not be possible. (ABMA, No. 64 at p. 2)

Based on the foregoing, DOE adopts equipment classes for ''very large'' commercial packaged boilers in this final rule. However, as discussed in the March 2016 NOPR, an upper limit for the rated input for commercial packaged boilers regulated by DOE's standards would violate EPCA's anti-backsliding provisions set forth in 42 U.S.C. 6313(a)(6)(B)(iii)(I), as the existing standards apply to all equipment meeting the definition of commercial packaged boiler regardless of the rated input. Providing an upper limit for rated input above which standards do not apply would essentially be repealing the existing standards for that equipment, which is prohibited by the anti-backsliding clause. As such, DOE maintains the existing standards for very large commercial packaged boilers at the levels currently applicable to all commercial packaged boilers with rated input greater than or equal to 2,500 kBtu/h.

In summary, today's final rule adopts the following changes proposed in the March 2016 NOPR: (1) Separating the equipment classes for commercial packaged boilers that have rated input above 10,000 kBtu/h, and (2) consolidating the equipment classes for small and large gas-fired steam boilers that are currently divided based on draft type into equipment classes that are not divided based on draft type, thereby reducing the four draft-specific classes into two classes that are not draft specific. In addition, DOE has decided not to amend energy conservation standards for very large commercial packaged boilers. The current standards for large CPB equipment classes will remain applicable to the corresponding very large CPB equipment classes.

Thus, in total, DOE is adopting 12 equipment classes [28] for commercial packaged boilers. The equipment classes are categorized based on: (1) Rated input (small (≥300,000 Btu/h to ≤2,500,000 Btu/h), large (>2,500,000 Btu/h and ≤10,000,000 Btu/h) and very large (>10,000,000 Btu/h)); (2) heating medium (hot water or steam); and (3) fuel type (gas-fired or oil-fired). Table IV.1 shows all of the CPB equipment classes, including the eight equipment classes for which DOE is amending standards and four equipment classes for which DOE did not amend standards.

TABLE IV.1—EQUIPMENT CLASSES FOR COMMERCIAL PACKAGED BOILERS

Equipment class	Size	Fuel	Heating medium	Acronym	Amended standards adopted in this final rule
Small Gas-fired Hot Water	≥300kBtu/h to ≤2,500kBtu/h	Gas	Hot Water	SGHW	Yes.
Large Gas-fired Hot Water	>2,500kBtu/h to ≤10,000kBtu/h	Gas	Hot Water	LGHW	Yes.
Very Large Gas-fired Hot Water**	>10,000kBtu/h	Gas	Hot Water	VLGHW	No.
Small Oil-fired Hot Water	≥300kBtu/h to ≤2,500kBtu/h	Oil	Hot Water	SOHW	Yes.
Large Oil-fired Hot Water	>2,500kBtu/h to ≤10,000kBtu/h	Oil	Hot Water	LOHW	Yes.
Very Large Oil-fired Hot Water**	>10,000kBtu/h	Oil	Hot Water	VLOHW	No.
Small Gas-fired Steam*	≥300kBtu/h to ≤2,500kBtu/h	Gas	Steam	SGST	Yes.
Large Gas-fired Steam*	>2,500kBtu/h to ≤10,000kBtu/h	Gas	Steam	LGST	Yes.
Very Large Gas-fired Steam**	>10,000kBtu/h	Gas	Steam	VLGST	No.
Small Oil-fired Steam	≥300kBtu/h to ≤2,500kBtu/h	Oil	Steam	SOST	Yes.
Large Oil-fired Steam	>2,500kBtu/h to ≤10,000kBtu/h	Oil	Steam	LOST	Yes.
Very Large Oil-fired Steam**	>10,000kBtu/h	Oil	Steam	VLOST	No.

* The small, gas-fired, steam, natural draft equipment classes and small, gas-fired steam, all except natural draft equipment classes prior to this final rule are consolidated into a single small gas-fired, steam equipment class. Similarly, the large, gas-fired, steam, natural draft equipment classes and large, gas-fired steam, all except natural draft equipment classes prior to this final rule are consolidated into a single large, gas-fired, steam equipment class.

** DOE establishes separate equipment classes for commercial packaged boilers with rated input above 10,000kBtu/h.

[28] Consolidating the 4 draft-specific classes into 2 non-draft-specific classes reduces the number of equipment classes from 10 to 8, and creating separate equipment classes for very large CPB equipment adds 4 equipment classes. These changes result in 12 equipment classes.

4. Market Assessment

As discussed previously, in the market assessment DOE uses qualitative and quantitative information to assess the past and present industry structure and market characteristics. In carrying out this assessment, DOE examines literature from a variety of sources, including industry publications, trade journals, government agencies, manufacturers, and trade organizations.

In the March 2016 NOPR, DOE compiled a database of commercial packaged boilers that was sourced from the AHRI's Directory of Certified Product Performance (AHRI database) for commercial packaged boilers and information gathered from manufacturer specifications of ABMA member manufacturers. In chapter 3 of the NOPR TSD, DOE presented histograms showing the distribution of commercial packaged boilers by efficiency and rated input for each equipment class. DOE used these distributions of models as inputs to the engineering analysis to calculate the incremental prices and identify intermediate and max-tech efficiency levels in each equipment class.

In response to using the distribution of models in the engineering analysis, AHRI provided comments requesting DOE to reconsider its approach. AHRI provided histograms of the distribution of the boiler models based on their directory of certified equipment performance and highlighted the differences with the histograms presented in the market and technology assessment (chapter 3 of the NOPR TSD). (AHRI, No. 76 at p. 12) Raypak also provided comments opposing the use of the distribution of CPB models available on the market in each equipment class, to conduct the engineering analysis. Raypak also added that DOE does not have equipment listings for 11 out of 45 manufacturers who are not represented by AHRI or ABMA. (Raypak, Public Meeting Transcript, No. 61 at pp. 57–58; Raypak, No. 72 at pp. 2–3)

In response, DOE notes that it created the equipment database for the March 2016 NOPR using the AHRI database (that was accessed in July 2015) and models of ABMA member manufacturers. The histograms that AHRI provided in their comments only include models from a more recent version of AHRI's directory of equipment performance. Therefore, the difference in the histograms is most likely due to the difference in the versions of the AHRI database considered in the March 2016 NOPR and in AHRI's comments; and due to the additional data from ABMA member manufacturer literature which is not accounted for in the histograms in AHRI's comments.

In this final rule, DOE has created an updated database, that includes commercial packaged boilers from several sources of information, including its own Compliance Certification Database,[29] AHRI's Directory of Certified Product Performance [30] (accessed in July 2016) for commercial packaged boiler, and manufacturer literature. In response to comments provided by Raypak, DOE has also considered boilers that meet the definition of commercial packaged boilers and are produced by manufacturers who are not members of ABMA or AHRI. DOE compiled a database consisting of a total of 4,791 CPB models for the final rule (MTA database). However, in the downstream analysis, DOE did not use information for certain models because they either: (1) Did not list the relevant energy efficiency metric applicable for that commercial packaged boiler; (2) had rated efficiency lower than the corresponding energy conservation standard; or (3) listed an efficiency rating based on a test procedure other than DOE's test procedure for commercial packaged boilers. While such equipment was considered as part of the boiler models available on the market since they meet the definition of commercial packaged boilers, they were not considered in the downstream analysis since the relevant data was missing. Out of the total of 4,791 CPB models in the MTA database, 2,826 models had the necessary data for consideration in the engineering analysis. (Note, the 2,826 model count does not include the models in the ''very large'' equipment classes.) DOE used these remaining boiler models for selecting efficiency levels and to conduct the analysis for evaluating the incremental prices for higher efficiency. DOE has presented the distribution of commercial packaged boilers based on the relevant energy-efficiency metric (*i.e.,* E_T or E_C) and rated input in chapter 3 of the final rule TSD.

In response to the March 2016 NOPR, AHRI provided aggregated shipments data for SGHW and LGHW equipment classes, broken down by efficiencies and rated input for the years 2014 and 2015. In a separate correspondence with DOE, AHRI has also provided aggregated annual shipment information for different non-condensing and condensing; and gas- and oil-fired commercial packaged boilers spanning the years from 2001 to 2015. (AHRI, No. 76 at p. 13)

DOE used the shipment data provided by AHRI in its rulemaking analyses for this final rule.

Chapter 3 of the final rule TSD, the market and technology assessment, contains a detailed discussion of the models in the analysis used and the distribution of CPB models by their efficiency and rated input, and other characteristics (*e.g.,* material, modulating or non-modulating). Chapter 5 of the final rule TSD, the engineering analysis, discusses the models used for the selection of efficiency levels and the engineering analysis.

5. Technology Options

As part of the rulemaking analysis, DOE identifies technology options that are currently used in commercial packaged boilers at different efficiency levels available on the market. This helps DOE to assess the technology changes that would be required to increase the efficiency of a commercial packaged boiler from baseline to other higher efficiency levels. Initially, these technologies encompass all those DOE determines are technologically feasible.

As a starting point, DOE typically uses information from existing and past rulemakings as inputs to determine what technologies manufacturers use to attain higher performance levels. DOE also researches emerging technologies that have been demonstrated in prototype designs. DOE developed its list of design options for the considered equipment classes through consultation with manufacturers, including manufacturers of components and systems, and from trade publications and technical papers.

In the March 2016 NOPR, DOE presented a list of technologies for improving the efficiency of commercial packaged boilers: (1) Jacket insulation; (2) heat exchanger improvements (including condensing heat exchanger); (3) burner derating; (4) improved burner technology; (5) combustion air preheaters; (6) economizers; (7) blowdown waste heat recovery; (8) oxygen trim systems; and (9) integrated, high efficiency steam boiler. DOE also added in the March 2016 NOPR that it is considering ''pulse combustion burners'' as an option to achieve condensing operation and tentatively decided to categorize it under condensing boiler heat exchanger design. 81 FR 15853.

[29] DOE's Compliance Certification Database is located at: *https://www.regulations.doe.gov/certification-data/#q=Product_Group_s%3A*.*

[30] AHRI's Directory of Certified Product Performance can be found at *https://www.ahridirectory.org/ahridirectory/pages/home.aspx.*

In response to the March 2016 NOPR, Lochinvar suggested that the benefits of the oxygen trim technology were overstated in the TSD and requested that DOE provide more details on the 1 to 2 percent efficiency improvement claim. Lochinvar noted that oxygen trim systems require electronically positioned valves and other controls that increase the cost of the boiler which must be factored into the analysis. Lochinvar added that oxygen trim systems incorporate oxygen sensors which require replacement every few years. (Lochinvar, No. 70 at p. 7)

In response, DOE notes that the efficiency increments specified in the NOPR TSD for oxygen trim systems are based on a possible reduction in combustion air and an estimated improvement in efficiency corresponding to that reduction in excess air. These efficiency improvements are sourced from publicly available literature.[31] Based on the literature, every 1-percent decrease in excess oxygen or 15-percent decrease in excess air in the stack, could result in an improvement in efficiency of 0.5 percent and 1 percent, respectively. While DOE considered these technology options as opportunities to improve the efficiency for the technology assessment, it did not use the options directly in the engineering analysis to establish a path for improvement in efficiency and calculate the corresponding incremental cost. Instead, in the engineering analysis, DOE used the price-efficiency approach to determine the increase in manufacturer selling price of the boiler with respect to increase in efficiency (see section IV.C.1). This approach relies on selecting efficiency levels and collecting pricing for commercial packaged boilers at those levels, regardless of the particular technology used to reach the level and using that information to develop aggregate industry price estimates at each efficiency level. Therefore, the technology options identified and specifically the options that passed the screening analysis (discussed in section IV.B of this final rule) do not directly impact the engineering analysis, but rather serve an informational purpose for options that manufacturers, researchers, and other interested parties may consider to improve the efficiency of commercial packaged boilers.

[31] For more information on ''Oxygen trim systems'' see: *http://www1.eere.energy.gov/manufacturing/tech_assistance/pdfs/steam4_boiler_efficiency.pdf* and *http://www.pdhonline.com/courses/m166/m166content.pdf.*

DOE also received comments from Raypak in the NOPR public meeting recommending moving pulse combustion as a completely independent technology option rather than enlisting it under heat exchanger improvements. (Raypak, Public Meeting Transcript, No. 61 at p. 51)

DOE agrees with the comments and has decided to add pulse combustion as a separate technology option different from heat exchanger improvements or improved burner technology.

DOE did not receive any other comments on the technology options it considered in the March 2016 NOPR. Therefore, in this final rule, DOE has retained all the technology options that were identified in the March 2016 NOPR and has included ''pulse combustion'' as a separate technology option. The technology options that are identified for the final rule analysis are described in detail in chapter 3 of the final rule TSD.

B. Screening Analysis

After DOE identified the technologies that might improve the energy efficiency of commercial packaged boilers, DOE conducted a screening analysis. The goal of the screening analysis is to identify technology options that will be considered further, and those that will be eliminated from further consideration, in the rulemaking analyses. DOE applied the following set of screening criteria to each of the technologies identified in the technology assessment to determine which technology options are unsuitable for further consideration in the rulemaking:

- *Technological feasibility:* DOE will consider technologies incorporated in commercial equipment or in working prototypes to be technologically feasible.
- *Practicability to manufacture, install, and service:* If mass production and reliable installation and servicing of a technology in commercial equipment could be achieved on the scale necessary to serve the relevant market at the time the standard comes into effect, then DOE will consider that technology practicable to manufacture, install, and service.
- *Adverse impacts on equipment utility or equipment availability:* If DOE determines a technology would have a significant adverse impact on the utility of the equipment to significant subgroups of consumers, or would result in the unavailability of any covered equipment type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as equipment generally available in the United States at the time, it will not consider this technology further.
- *Adverse impacts on health or safety:* If DOE determines that a technology will have significant adverse impacts on health or safety, it will not consider this technology further. 10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b)

In sum, if DOE determines that a technology, or a combination of technologies, fails to meet one or more of the above four criteria, it will be excluded from further consideration in the engineering analysis. Additionally, it is DOE policy not to include in its analysis any proprietary technology that is a unique pathway to achieving a certain efficiency level.

In the March 2016 NOPR, DOE applied the screening criteria to all technologies identified in the technology assessment (see section IV.A.5). Based on the screening criteria described previously, DOE removed ''burner derating'' from further consideration in the rulemaking analysis, noting that the technology option could lower the heating output to the consumer thereby reducing consumer utility. The remaining technology options passed the screening analysis. Out of the options that passed the screening analysis criteria, DOE further identified technology options that would have negligible impact on the efficiency as measured by DOE's test procedure set forth in 10 CFR 431.86. Specifically, DOE identified the following technologies as having a negligible impact on the rated energy efficiency: (1) Jacket insulation; (2) combustion air pre-heaters; (3) economizers; and (4) blowdown waste heat recovery. These technologies were removed from further consideration in the rulemaking analysis. The remaining technology options were found to have an impact on the measured energy efficiency of commercial packaged boilers: (1) Heat exchanger improvements (including condensing heat exchangers); (2) improvements in burner technology; and (3) oxygen trim systems. 81 FR 15853–15855.

As discussed in section IV.A.5 of this final rule, DOE has decided to add pulse combustion as a separate technology option. Previously DOE had included pulse combustion under heat exchanger technology options which passed the screening analysis in the March 2016 NOPR. Therefore, in this final rule, pulse combustion was included as a separate technology option in the list that passed the screening analysis.

DOE did not receive any comments on the technology options that were

removed from further consideration or passed the screening criteria. Therefore, DOE continues to screen the technologies as was done for the March 2016 NOPR and summarized immediately above. For more information on the screening analysis see chapter 4 of the final rule TSD.

C. Engineering Analysis

The engineering analysis establishes the relationship between manufacturer selling prices (MSP) and energy-efficiency of commercial packaged boilers. This price-efficiency relationship serves as a basis for subsequent cost-benefit calculations for individual consumers, manufacturers, and the Nation.

To determine this price-efficiency relationship, DOE uses data from the market and technology assessment, publicly available equipment literature and research reports, and information from manufacturers, distributors, and contractors. For this rulemaking, DOE first used information from the market and technology assessment to identify efficiency levels and representative equipment for analysis (see section IV.A). In the engineering analysis, DOE collected CPB prices primarily from manufacturers, mechanical contractors, and equipment distributors. DOE tabulated all of the price data in a separate database, which is referred to as the ''prices database.''

1. Methodology

DOE has identified three basic methods for developing price-efficiency curves: (1) The design-option approach, which provides the incremental manufacturing costs of adding design options to a baseline model that will improve its efficiency; (2) the efficiency-level approach, which provides the incremental price of moving to higher efficiency levels without regard to any particular design option; (3) the reverse-engineering (or cost-assessment) approach, which provides ''bottom-up'' manufacturing cost assessments for achieving various levels of increased efficiency based on teardown analyses (or physical teardowns) providing detailed data on costs for parts and material, labor, shipping/packaging, and investment for models that operate at particular efficiency levels.[32]

For this rulemaking, DOE has decided to use the efficiency-level approach to conduct the engineering analysis. This methodology generally involves calculating prices of commercial packaged boilers for a given rated input (representative capacity) for each manufacturer at different efficiency levels spanning from the minimum allowable standard (*i.e.,* baseline level) to the maximum technologically feasible efficiency level. The primary output of the analysis is a set of price-efficiency relationships that represent the average change in manufacturer selling price for higher efficiency equipment (*i.e.,* ''incremental price''). In the subsequent markups analysis (chapter 6 in the final rule TSD), DOE determines consumer prices by applying additional distribution chain markups and sales tax to the manufacturer selling prices developed in the engineering analysis. After applying these markups, the data serve as inputs to the life-cycle cost and payback period analyses (chapter 8 in the final rule TSD).

As discussed previously, DOE classified commercial packaged boilers into twelve equipment classes based on rated input, heating medium (hot water or steam), and fuel type (gas or oil). For all equipment classes, except the very large CPB equipment classes (for which DOE is not amending energy conservation standards), DOE collected pricing data which it used to directly analyze the price-efficiency relationship of each equipment class. DOE did not analyze very large CPB equipment classes in this engineering analysis.

For each manufacturer selling price obtained, DOE first calculated the ratio of the price of the commercial packaged boiler with respect to its rated input to obtain all prices on a per-unit rated input basis (dollars per kBtu/h). The prices obtained were at various rated inputs, so DOE assigned weights to individual prices (on a per rated input basis) based on the distribution of rated inputs of either CPB shipments (where DOE had this data available) or CPB models available on the market. DOE gave more weight to the prices for equipment at input capacities that have higher representation in CPB shipments or CPB models on the market. For SGHW equipment class, AHRI provided shipment information that includes the distribution of CPB shipments by rated input and by efficiency. Therefore, for the engineering analysis for the SGHW equipment class, DOE used the information provided by AHRI to calculate the weights based on the distribution of shipments by rated input. For all other equipment classes, DOE did not have information on distribution of shipment by rated input. As a result, DOE used the numbers of models available on the market from the equipment database to calculate the weights to corresponding to the rated input of each CPB price. DOE applied these weights to calculate the weighted average price per rated input and the weighted average rated input for each efficiency level.

Next, DOE scaled the weighted average price (on a per rated input basis) at each efficiency level from the weighted average rated input (at which the price was calculated in the previous step) to the representative rated input for the respective equipment class. DOE used 800 kBtu/h and 3,000 kBtu/h as the representative rated input for the small and large equipment classes. To normalize the prices back to the representative capacity, DOE used non-linear regression to determine the equation that best represents the price on a per-unit input basis as a function of rated input. Through the non-linear regression, DOE noticed that for lower input capacities the price on a per input basis is higher, and as the rated input increases, the price per input decreases. In addition, the rate of change of the price on a per-unit input basis with respect to rated input also decreases considerably as the rated input increases. The result of this non-linear regression is a scatter plot that appears to resemble a decreasing exponential curve. This trend is expected, as CPB models will have certain fixed costs that are present regardless of the size, and other costs that will increase as the rated input increases. DOE applied the regression equation to determine the weighted average price per input at the representative rated input for each efficiency level analyzed.

Once DOE had determined the weighted average price per input at the representative capacity for all efficiency levels, DOE performed a regression analysis to deduce the equation that best represents the price-efficiency relationship. Using the regression equation, DOE calculated the predicted weighted average price per input at the representative capacity for all efficiency levels that were analyzed in each equipment class. DOE then multiplied the predicted weighted average price per input at the representative capacity by the representative capacity to get the manufacturer selling price at each efficiency level. As a final step, DOE calculated the incremental prices by subtracting the baseline price from the manufacturer selling price of each efficiency level above the baseline.

DOE used the methodology described above to analyze each equipment class (other than very large equipment classes). For the SGHW equipment classes DOE used the same methodology

[32] The term 'cost' refers to the manufacturing cost, while the term 'price' refers to the manufacturer selling price. In some of the engineering analysis approaches DOE calculates the manufacturing cost which is multiplied with the appropriate markups to get the manufacturer selling price.

to conduct separate analyses for condensing and non-condensing efficiency levels. This was done to account for difference in the slopes of the price efficiency curves between non-condensing and condensing efficiency levels. To carry out the separate assessment for condensing SGHW commercial packaged boilers, DOE separated the condensing SGHW models from the non-condensing SGHW models and used the separate datasets to conduct the analysis as per the methodology described in the previous paragraph. DOE did not have sufficient pricing data to analyze each condensing efficiency level of LGHW, SOHW and LOHW. As a result, DOE did not analyze these condensing levels separately. Instead, DOE used the same incremental manufacturer selling prices that were determined in the preliminary analysis TSD to evaluate the prices for condensing efficiency levels in these equipment classes. DOE did not receive any comments in the previous stages of the rulemaking providing additional pricing data or suggesting that the prices were inaccurate.

For further details on the methodology and results are provided in the chapter 5 of the final rule TSD.

a. Analysis of Large CPB Equipment Classes

As discussed in section IV.C.2, DOE collected 584 CPB prices that covered all CPB equipment classes that are analyzed in this final rule. Out of the eight equipment classes analyzed, DOE received sufficient information to analyze five equipment classes at all efficiency levels without extrapolation of data from other equipment class. For three large equipment classes, *i.e.,* LOHW, LGST and LOST, DOE did not have pricing data at several efficiency levels that are analyzed in this final rule. The lack of data stems from the general low number of models available in the market for such equipment classes. To address these cases, DOE leveraged the pricing collected for the small CPB equipment classes to estimate the price of a large commercial packaged boiler. To extrapolate the prices, DOE first combined the price data of each small and large equipment classes that have the same characteristics (*e.g.,* SHOW and LOHW). DOE then performed a regression analysis of the entire dataset to find an equation that represents the relationship between equipment price and rated input for the given type of equipment. DOE then used the equation to estimate the price of a commercial packaged boiler when its size is scaled up to 3,000 kBtu/h. The detailed methodology for the engineering analysis including, the plots that show the variation of CPB price with rated input are included in chapter 5 of the final rule TSD. In the March 2016 NOPR DOE tentatively used this approach to estimate prices for commercial packaged boilers at certain efficiency levels for the three equipment classes. DOE requested comments and feedback from interested parties on various aspects of the engineering analysis performed for the NOPR analysis, and specifically on the methodology and results.

In response to this approach, DOE received comments from ABMA expressing concern about the extrapolation of prices from small boilers to address the lack of data for large boilers. ABMA stated that large boilers not only have a significantly different applications and features but also carry an exponentially higher cost for transportation, installation and start-up. (ABMA, No. 64 at p. 1) Phoenix Energy Management stated in the NOPR public meeting that there is no connection between a small and a large boiler and that there are multiple variables that come into play in establishing the price. (PEM, Public Meeting Transcript, No. 61 at p. 64) Raypak stated that the price of a 3,000 kBtu/h boiler is substantially different from a 10,000 kBtu/h boiler. (Raypak, Public Meeting Transcript, No. 61 at p. 65)

In response, DOE notes that the extrapolation of prices from the small to large equipment classes (for oil-fired hot water and steam; and gas-fired steam equipment classes) is based on actual pricing data that is available for commercial packaged boilers in each corresponding small and large equipment classes. DOE obtained 163 prices for large CPB models in the LOHW, LGST, and LOST equipment classes that were used in developing the price trend between small and large commercial packaged boilers in these classes. There are only a few efficiency levels in the three large equipment classes where DOE extrapolated data from the corresponding small classes. The trends in prices between the small and large classes show a smooth linear trend and are devoid of sudden changes in pricing structure. The r-squared values for the linear equations that fit the pricing data are 0.923, 0.982 and 0.967 for oil-fired hot water, gas-fired steam and oil-fired steam equipment classes, respectively, indicating a strong fit to the data. Considering the r-squared value of the plots, DOE is highly confident that the extrapolated prices used in the analysis are representative of the prices for larger commercial packaged boilers. Therefore, in this final rule, DOE continues to use this approach to estimate the prices at several efficiency levels for LOHW, LGST and LOST commercial packaged boilers.

The detailed methodology for the engineering analysis including the plots that show the variation of CPB price with rated input are included in chapter 5 of the final rule TSD.

2. Data Collection and Categorization

As part of the engineering analysis, DOE collected 584 CPB prices from manufacturers, wholesalers, distributors and contractors.

A distributor or wholesaler is usually the first consumer in the distribution chain and typically receives a discount on the list price when purchasing equipment from the manufacturer. This discount varies by manufacturer and the equipment being sold, and also depends on the business relationship between the manufacturer and the purchaser (*i.e.,* the discount may vary depending on the volume of units that a distributor or contractor purchases). While collecting price data, DOE also obtained information on typical discounts applicable on the list prices, and applied the discount to list prices to obtain the actual manufacturer selling price. All manufacturer selling prices used in the engineering analysis include the appropriate discount to the list prices. In chapter 5 of the NOPR TSD, DOE specified that the discount rates offered by manufacturers typically lie within a range of 15 to 40 percent.

In response to this, AHRI commented that the equipment costs were wrongly generated using estimated discounts from list prices. AHRI highlighted that the discount factors used in the analysis had a large range (15 to 40 percent) and were based on manufacturers or DOE's estimates rather than actual data. AHRI stated that even small errors in these factors would have a significant effect on the resulting relationships established by DOE for determining actual manufacturer selling prices. AHRI opposed DOE's use of a single price estimate for an assumption with known variability and suggested using distribution of the estimates. (AHRI, No. 76 at pp. 41–42)

DOE disagrees with AHRI's comment suggesting that it used its own estimates rather than actual data to determine the discounts from list pricing that are applicable to the pricing data. The range of discount rates specified in the chapter 5 of the NOPR TSD and mentioned in AHRI's comment, represent the typical rates offered by manufacturers. DOE gathered this

information through consultations with manufacturers, distributors, and contractors that provided CPB price data. While collecting pricing data, DOE also requested and received specific information on the discounts from list price offered by specific manufacturers and received by specific distributors. As a result, DOE had actual data on list price discounts for the models for which pricing was obtained, and DOE applied those discounts directly to the corresponding CPB list prices to calculate the manufacturer selling price that was used in the analysis. DOE considered the comments received from AHRI with regard to using a distribution of list price discount estimates instead of a fixed value. DOE concludes that using actual list price discounts that were shared by manufacturers, contractors and distributors is a more accurate approach to estimate the actual manufacturer selling prices than randomly assigning the discount based on a distribution through a Monte Carlo simulation, as suggested by AHRI. As a result, DOE decided to use the actual data for list price discounts received from manufacturers, distributors and contractors and applied it to the list prices received from the respective source before using the pricing data in the engineering analysis.

DOE collected the bulk of its prices for commercial packaged boilers from distributors and contractors. This price data was also supplemented by information gathered through manufacturer interviews. The prices cover a wide variety of commercial packaged boiler models. The models for which DOE obtained pricing include mechanical draft, natural (or atmospheric) draft, condensing boilers and non-condensing boilers, and cover all equipment classes that are analyzed in this rulemaking. The input capacities of boilers for which prices were obtained ranged from 300 kBtu/h to 9,500 kBtu/h.

In the March 2016 NOPR, DOE also described the approach it used in selecting the add-on features applicable to each commercial packaged boiler that is included in the price books. Most of the add-on features are related to control system that do not have an impact on the E_T or E_C as measured using DOE's test procedure. Each additional feature installed on a basic boiler model adds to the price of the model. However, this increase in price is generally not associated with the corresponding increase in efficiency.

In response to the engineering analysis, ABMA stated that very large commercial packaged boilers are extremely difficult to price because these boilers are custom built to a specific set of requirements for a given installation. ABMA noted that the customization is primarily in the area of controls, instrumentation, interfacing with building energy management systems and meeting location specific emission requirements. ABMA noted that these add-ons carry a high price tag. However, ABMA suggested that while these units are custom built, they are built on a standard heat exchanger design and burner capacity and therefore energy efficiency should not be affected by the customizing features. (ABMA, No. 64 at p. 2) Raypak provided comments at the public meeting that DOE should be looking at the local code requirements that vary with jurisdiction, for installing commercial packaged boilers, stating that as the size increases the number of applicable controls and codes also increase. (Raypak, Public Meeting Transcript, No. 61 at pp. 62–63)

DOE agrees with ABMA that the customizing of certain optional features do not impact the efficiency of commercial packaged boilers. To ensure that the cost of added features (that do not improve the efficiency of the equipment) are not included in the prices used for the engineering analysis, DOE normalized the optional features applicable to each boiler model by selecting the same options for all CPB prices collected. For example, DOE noticed that in several CPB series, prices of control and safety features are listed separately which get added to the basic model trade price. For such cases, DOE chose the same type of control feature for all CPB models where a choice is offered. While selecting the prices DOE also encountered scenarios where (1) a feature that DOE has consistently selected for all CPB models is not offered for a particular series; and (2) a particular feature becomes inapplicable for commercial packaged boilers of higher capacity within the same CPB series. In such cases DOE selected a similar feature that would offer similar functionality. This approach helped to minimize the effects of optional auxiliary components.

In response to the engineering analysis presented in the NOPR public meeting, ABMA asked how much data was available and used for large sized boilers. (ABMA, Public Meeting Transcript, No. 61 at pp. 93–94)

In response, Table IV.2 shows the number of CPB prices that DOE used in the engineering analysis in each equipment class. This table was also presented in the March 2016 NOPR. 81 FR 15858. DOE did not collect additional price data for the final rule analysis.

TABLE IV.2—NUMBER OF PRICES COLLECTED FOR ENGINEERING ANALYSIS

Equipment class	Number of prices used in analysis
SGHW	203
LGHW	52
SOHW	70
LOHW	44
SGST	72
LGST	76
SOST	24
LOST	43
Total	584

As discussed previously, in response to DOE's requests for shipment data for conducting the rulemaking analyses, AHRI provided actual shipments data for SGHW and LGHW equipment classes for the years 2014 and 2015. The information received represents shipment data collected by AHRI from AHRI-member manufacturers in an aggregated form. The information includes distributions of shipments by rated input for the SGHW equipment class for the years 2014 and 2015, distribution of shipments by efficiency for SGHW and LGHW equipment classes for the years 2014 and 2015, and shipment weighted efficiency for all equipment classes. DOE used the information for the distribution of shipment by rated input to conduct the analysis for SGHW condensing and non-condensing efficiency levels. Further, this information is also used to conduct LCC and PBP analysis.

3. Baseline Efficiency

DOE selects baseline efficiency levels as reference points for each equipment class, against which DOE calculates potential changes in energy use, cost, and utility that could result from an amended energy conservation standard. Typically, a baseline unit is one that meets, but does not exceed, the required energy conservation standard, as applicable, and provides basic consumer utility. A CPB model that has a rated efficiency equal to its applicable baseline efficiency is referred to as a ''baseline model.'' DOE uses the baseline model for comparison in several phases of the analyses, including the engineering analysis, LCC analysis, PBP analysis and NIA. For the engineering analysis, DOE used the current energy conservation standards that are set forth in 10 CFR 431.87 as baseline efficiency levels.

As discussed previously in section IV.A.3 of this document, DOE has consolidated the equipment classes that are set forth in the current regulations

such that the current draft-specific classes (*i.e.,* those identified as being ''natural draft'' and ''all except natural draft'') are merged into non-draft-specific classes. For the four draft-specific classes, DOE used the natural draft equipment class efficiency standard as the baseline efficiency level. For the remaining equipment classes, DOE used the current standards in 10 CFR 431.87 as the baseline efficiency levels in the engineering analysis. The baseline efficiency levels for each equipment class are presented in Table IV.3.

TABLE IV.3—BASELINE EFFICIENCIES CONSIDERED IN THE ENGINEERING ANALYSIS

Equipment class	Baseline efficiency * (%)
Small Gas-fired Hot Water	80
Large Gas-fired Hot Water	82
Small Oil-fired Hot Water	82
Large Oil-fired Hot Water	84
Small Gas-fired Steam	** 77
Large Gas-fired Steam	** 77
Small Oil-fired Steam	81
Large Oil-fired Steam	81

* Efficiency levels represent thermal efficiency for all equipment classes except for Large Gas Hot Water and Large Oil Hot Water, for which the efficiency levels are in terms of combustion efficiency.

** Mechanical draft equipment within this class currently has a minimum standard of 79-percent thermal efficiency. 10 CFR 431.87 All equipment analyzed below 79 percent is natural draft equipment.

4. Intermediate and Max-Tech Efficiency Levels

As part of its engineering analysis, DOE determined the maximum technologically feasible (''max-tech'') improvement in energy efficiency for each equipment class of commercial packaged boilers. DOE surveyed the CPB market and the research literature relevant to commercial packaged boilers to determine the max-tech efficiency levels. Additionally, for each equipment class, DOE generally identifies several intermediate efficiency levels between the baseline efficiency level and max-tech efficiency level. These efficiency levels typically represent the most common efficiencies available on the market or a major design change (*e.g.,* switching to a condensing heat exchanger). In the analysis, DOE uses the intermediate and max-tech efficiency levels as target efficiencies for conducting the cost-benefit analysis of achieving increased efficiency levels.

During the market assessment, DOE conducted an extensive review of publicly available CPB equipment literature. DOE used the distribution of models in the equipment database compiled during the market assessment to identify intermediate and max-tech efficiency levels for analysis. DOE generally selected the efficiency levels with the most models or that represented a significant technology (*e.g.,* condensing) for analysis. The efficiency levels for each equipment class that DOE considered in the final rule TSD are presented in Table IV.4.

TABLE IV.4—BASELINE, INTERMEDIATE AND MAX TECH EFFICIENCY LEVELS ANALYZED IN THE ENGINEERING ANALYSIS

Equipment class	Efficiency * (%)	Efficiency level identifier
Small Gas Hot Water	80	EL—0 Baseline.
	81	EL—1.
	82	EL—2.
	84	EL—3.
	85	EL—4.
	93	EL—5.
	95	EL—6.
	99	EL—7 Max Tech.
Large Gas Hot Water	82	EL—0 Baseline.
	83	EL—1.
	84	EL—2.
	85	EL—3.
	94	EL—4.
	97	EL—5 Max Tech.
Small Oil Hot Water	82	EL—0 Baseline.
	83	EL—1.
	84	EL—2.
	85	EL—3.
	87	EL—4.
	88	EL—5.
	97	EL—6 Max Tech.
Large Oil Hot Water	84	EL—0 Baseline.
	86	EL—1.
	88	EL—2.
	89	EL—3.
	97	EL—4 Max Tech.
Small Gas Steam	77	EL—0 Baseline.
	78	EL—1.
	79	EL—2.
	80	EL—3.
	81	EL—4.
	83	EL—5 Max Tech.
Large Gas Steam	77	EL—0 Baseline.
	78	EL—1.
	79	EL—2.
	80	EL—3.
	81	EL—4.

TABLE IV.4—BASELINE, INTERMEDIATE AND MAX TECH EFFICIENCY LEVELS ANALYZED IN THE ENGINEERING ANALYSIS—Continued

Equipment class	Efficiency * (%)	Efficiency level identifier
	82	EL—5.
	84	EL—6 Max Tech.
Small Oil Steam	81	EL—0 Baseline.
	83	EL—1.
	84	EL—2.
	86	EL—3 Max Tech.
Large Oil Steam	81	EL—0 Baseline.
	83	EL—1.
	85	EL—2.
	87	EL—3 Max Tech.

* Efficiency levels represent thermal efficiency for all equipment classes except for LGHW and LOHW, for which the efficiency levels are in terms of combustion efficiency.

Bradford White commented that the prices of commercial packaged boilers will increase due to the effect of the proposed CPB test procedure changes. Bradford White noted that if DOE establishes an 85-percent E_T standard for SGHW commercial packaged boilers, manufacturers may choose to overdesign their equipment by increasing their efficiency to be 0.5 to 1 percent greater than the minimum to ensure that the equipment passes any random audit test. Bradford White stated that as a result of this increase, commercial packaged boilers will likely be operating at temperatures that will lead to condensation forming in the vent. Manufacturers may incorporate additional sensors and controls, as well as more costly materials to protect the equipment longevity. This will lead to more costly equipment. (Bradford White, No. 63 at p. 3)

In response, DOE conducts its analysis to evaluate the increase in manufacturer selling price or manufacturing cost to achieve the desired efficiency level selected as part of the engineering analysis. Although some manufacturers may choose to overdesign their equipment, DOE cannot assume that the models on the market today and rated at a given efficiency would not be representative of models at that efficiency under an amended standard, as such a decision would be made by individual manufacturers based on their business practices. Further, DOE notes that if tests on a small sample produce a mean sample efficiency that is lower than what a manufacturer believes to be the true mean across manufactured units, DOE's regulations for commercial packaged boilers at 10 CFR 429.60 would permit the manufacturer to enlarge the sample rather than overdesign the equipment. The mean of a larger sample would tend to have smaller departures from the population mean. Therefore, DOE has determined it would be inappropriate to assume that at a given standard level under consideration costs would be incurred to achieve an efficiency greater than that being analyzed.

5. Incremental Price and Price-Efficiency Curves

The final results of the engineering analysis are a set of price-efficiency curves that represent the manufacturer selling price for higher efficiency models. DOE uses these results as inputs to the downstream analyses such as the life cycle cost analysis.

DOE received several comments on the incremental price results and the price-efficiency curves published in the NOPR analysis TSD.

Weil-McLain suggested that DOE's analysis did not adequately account for the additional costs related to additional components, venting materials, system engineering and design, manufacturing costs, installation costs and operating costs of higher efficiency mechanical draft equipment. (Weil-McLain, No. 67 at p. 2)

DOE does not agree with Weil-McLain, in that the engineering analysis conducted in this final rule is based on list prices that manufacturers and their representatives use to sell their equipment. These prices include the manufacturing cost and the relevant manufacturer markups (Markups analysis is discussed in section IV.D of this final rule). Other costs related to installation and venting are discussed in section IV.F of this final rule.

Table IV.5 shows the incremental manufacturer selling price results based on prices in 2015$ for all eight equipment classes along with the baseline prices.

TABLE IV.5—MANUFACTURER SELLING PRICE-EFFICIENCY RESULTS

[2015$]

Equipment class	Efficiency level*	Incremental prices	Baseline manufacturer selling price
Small Gas Hot Water	Baseline—80%	$0	$7,043
	81%	510	
	82%	961	
	84%	3,112	
	85%	4,048	
	93%	11,076	
	95%	11,719	
	Max Tech—99%	13,910	
Large Gas Hot Water	Baseline—82%	0	22,123
	83%	1,983	
	84%	4,144	

TABLE IV.5—MANUFACTURER SELLING PRICE-EFFICIENCY RESULTS—Continued

[2015$]

Equipment class	Efficiency level*	Incremental prices	Baseline manufacturer selling price
	85%	6,498	
	94%	31,917	
	Max Tech—97%	36,025	
Small Oil Hot Water	Baseline—82%	0	8,626
	83%	689	
	84%	1,433	
	85%	2,236	
	87%	4,040	
	88%	5,051	
	Max Tech—97%	17,465	
Large Oil Hot Water	Baseline—84%	0	19,128
	86%	4,870	
	88%	10,980	
	89%	14,595	
	Max Tech—97%	49,710	
Small Gas Steam	Baseline—77%	0	6,630
	78%	568	
	79%	1,184	
	80%	1,853	
	81%	2,580	
	Max Tech—83%	4,225	
Large Gas Steam	Baseline—77%	0	19,365
	78%	1,132	
	79%	2,329	
	80%	3,597	
	81%	4,939	
	82%	6,359	
	Max Tech—84%	9,453	
Small Oil Steam	Baseline—81%	0	7,617
	83%	1,651	
	84%	2,607	
	Max Tech—86%	4,823	
Large Oil Steam	Baseline—81%	0	18,781
	83%	3,236	
	85%	7,029	
	Max Tech—87%	11,476	

* Efficiency levels represent thermal efficiency for all equipment classes except for LGHW and LOHW, for which the efficiency levels are in terms of combustion efficiency.

D. Markups Analysis

The markups analysis develops appropriate markups in the distribution chain (*e.g.,* retailer markups, distributer markups, contractor markups, and sales taxes) to convert the estimates of manufacturer selling price derived in the engineering analysis to consumer prices (''consumer'' refers to purchasers of the equipment being regulated), which are then used in the LCC and PBP analysis and in the manufacturer impact analysis. DOE develops baseline and incremental markups based on the equipment markups at each step in the distribution chain. For this rulemaking, DOE developed distribution chain markups in the form of multipliers that represent increases above equipment purchase costs for key market participants, including CPB wholesalers/distributors, and mechanical contractors and general contractors working on behalf of CPB consumers. The baseline markup relates the change in the manufacturer selling price of baseline models to the change in the consumer purchase price. The incremental markup relates the change in the manufacturer selling price of higher efficiency models (the incremental cost increase) to the change in the consumer purchase price.

Four different markets exist for commercial packaged boilers: (1) New construction in the residential buildings sector, (2) new construction in the commercial buildings sector, (3) replacements in the residential buildings sector, and (4) replacements in the commercial buildings sector. In this rulemaking, DOE characterized eight distribution channels to address these four markets.

For both the residential and commercial buildings sectors, DOE characterizes the replacement distribution channels as follows:

- Manufacturer → Wholesaler → Mechanical Contractor → Consumer
- Manufacturer → Manufacturer Representative → Mechanical Contractor → Consumer

DOE characterizes the new construction distribution channels for both the residential and commercial buildings sectors as follows:

- Manufacturer → Wholesaler → Mechanical Contractor → General Contractor → Consumer
- Manufacturer → Manufacturer Representative → Mechanical Contractor → General Contractor → Consumer

In addition to these distribution channels, there are scenarios in which manufacturers sell commercial packaged boilers directly to a consumer through a national account via a manufacturer representative, and its associated markup (assumed as 12.5 percent of sales; other distribution channels previously discussed make up the remaining 87.5 percent of sales).

These scenarios occur in both new construction and replacements markets and in both the residential and commercial sectors. The relative shares for these are dependent on equipment class and details may be found in chapter 6 of the final rule TSD. In these instances, installation is typically accomplished by site personnel. These distribution channels are depicted as follows:

- Manufacturer → Manufacturer Representative → Consumer (National Account)

To develop markups for the parties involved in the distribution of the commercial packaged boilers, DOE utilized several sources, including (1) the Heating, Air-Conditioning & Refrigeration Distributors International (HARDI) 2013 Profit Report [33] to develop wholesaler markups; (2) the 2005 Air Conditioning Contractors of America's (ACCA) financial analysis for the heating, ventilation, air-conditioning, and refrigeration (HVACR) contracting industry [34] to develop mechanical contractor markups; and (3) U.S. Census Bureau's 2012 Economic Census data [35] for the commercial and institutional building construction industry to develop general contractor markups. In addition to the markups, DOE derived State and local taxes from data provided by the Sales Tax Clearinghouse.[36] These data represent weighted-average taxes that include county and city rates. DOE derived shipment-weighted-average tax values for each region considered in the analysis.

In the March 2016 NOPR, DOE requested information or insight that would better inform its markups analysis. Bradford White commented that for the CPB market most units are sold from the manufacturer to a buy/sell representative, also known as a specialty wholesaler, before being sold to the contractor and eventually the consumer. It is also Bradford White's experience that sales to national accounts still go through a wholesaler. (Bradford White, No. 68 at p. 4) Lochinvar stated that a distributor/wholesaler as the first consumer in the distribution chain does not adequately represent the primary commercial boiler market, noting 80 percent of small and large commercial packaged boilers typically follow the path of Manufacturer → Manufacturer Representative → Mechanical Contractor → General Contractor → Owner. (Lochinvar, No. 70 at p. 2) Raypak somewhat agreed with the distribution model used by DOE for commercial packaged boilers, noting that it uses manufacturer representatives almost exclusively, but also noting that DOE's model shows wholesalers and manufacturer representatives in the same category and that these should be handled separately, as their functions differ. Further, Raypak commented that DOE is underestimating the markups associated with manufacturer representatives in the distribution formula and other downstream analyses, and that it believes the estimated market segment and sector weights by CPB equipment class breakouts are not appropriate and that the assumption of 17.5 percent of commercial packaged boilers sold via national accounts is a considerable overstatement, noting it believes it should be closer to 5 percent. (Raypak, No. 72 at p. 4)

DOE appreciates the stakeholder inputs regarding distribution channels for commercial packaged boilers. DOE believes that there is a misunderstanding around the national account distribution channel. DOE wishes to clarify that the national account considered for commercial packaged boilers already includes a manufacturer representative tier whose markup is the same as a wholesale distributor in the regular channel and the equipment does not get sold to the consumers directly from the manufacturer but through the manufacturer representative. With respect to the estimated market segment and sector weights, while Raypak commented that 17.5 percent is an overestimation, Lochinvar's comment suggests that 20 percent of the market segment is handled through the national distribution channel. DOE considered these comments and adjusted the fraction of commercial packaged boilers sold via the national account distribution channel to 12.5 percent.

DOE also received comments regarding its use of incremental markups. BHI commented that DOE should eliminate the use of incremental markups, noting the varying supply chains and tremendous number of options, and recommends that DOE survey building owners to find out what they are actually paying for various classes of equipment, acknowledging that this has drawbacks but should result in more accurate costs. (BHI, No. 71 at pp. 17–18) AHRI continues to object to DOE's use of incremental markups, and reiterates that it has provided ample evidence that contractors do not use incremental markups. However, it understands that the markups in DOE's analysis are approximately accurate as average markups, also noting manufacturer's representatives have markups in the 10- to 15-percent range. (AHRI, No. 76 at pp. 41–42) NEEA commented that when they do similar analyses, the focus is on the costs that change based on the efficiency of the boiler, noting that in their experience it is when you change technology (*e.g.,* non-condensing to condensing) that things will change, and that DOE's approach is similar in that it is looking for incremental differences, not specific differences in any given building. (NEEA, Public Meeting Transcript, No. 61 at pp. 99–101) AHRI also commented that the markups for large and small boilers were not different enough. Crown commented that the markup methodology being used is probably inappropriate and that DOE should take the time to survey the engineers who are actually installing units. AHRI commented that they had little confidence in the incremental markups process, despite acknowledging in written comments that the markups in DOE's analysis are approximately accurate as average markups, and asked if there was an intent to survey, at some level, the actual selling point of the commercial boiler. (AHRI, Public Meeting Transcript, No. 61 at pp. 95–96, AHRI, No. 76 at pp. 41–42, Crown, Public Meeting Transcript, No. 61 at p. 103)

In response to these comments, DOE notes that incremental markups relate the change in manufacturer selling price of higher efficiency equipment to the change in the consumer purchase price. DOE develops markups based on data on costs incurred by various entities in the distribution chain and considers that certain costs incurred by these entities would not be expected to increase due to merely increasing the efficiency of equipment. For example, salaries, benefits, and operating expenses are among those costs that would not be expected to increase with higher costs of goods sold. With respect to BHI's and AHRI's comment that incremental markups are not typically used by contractors and manufacturers, DOE notes that it does not expect that an individual manufacturer or contractor would, in its general practice,

[33] *Heating, Air Conditioning & Refrigeration Distributors International 2013 Profit Report.* Available at *https://web.archive.org/web/20130822231322/http://www.hardinet.org/Profit-Report.*

[34] Air Conditioning Contractors of America (ACCA), *Financial Analysis for the HVACR Contracting Industry: 2005.* Available at *http://www.acca.org/store/.*

[35] Census Bureau. 2012 Economic Census Data. (2012). Available at *http://www.census.gov/econ/.*

[36] Sales Tax Clearinghouse Inc. State Sales Tax Rates Along with Combined Average City and County Rates, (2016). Available at: *http://thestc.com/STrates.stm.*

differentially provide markups by efficiency level or equipment cost. The concept of incremental markups applies to an industry as a whole and serves the purpose in this rulemaking of differentiating industry costs that scale up with cost of goods sold, and those that would not, as described in the final rule TSD. DOE's intent is to accurately estimate the price of higher efficiency equipment to the consumer under an amended standards scenario, and as such DOE maintains that the markups methodology accomplishes this and is consistent with the methodology used in other rulemakings.

Chapter 6 of the final rule TSD provides details on DOE's development of markups for commercial packaged boilers.

E. Energy Use Analysis

The purpose of the energy use analysis is to determine the annual energy consumption of commercial packaged boilers in use in the United States and assess the energy savings potential of increases in efficiency (thermal efficiency (E_T) or combustion efficiency (E_C)). The energy use analysis for commercial packaged boilers seeks to estimate the range of energy consumption of the equipment in the field (*i.e.,* as they are actually used by consumers). DOE estimates the annual energy consumption of commercial packaged boilers at specified energy efficiency levels across a range of climate zones, building characteristics, and space and water heating applications. The annual energy consumption includes natural gas, liquid petroleum gas (LPG), oil, and/or electricity use by the commercial packaged boiler for space and water heating. The energy use analysis provides the basis for other analyses DOE performed, particularly assessments of the energy savings and the savings in consumer operating costs that could result from adoption of amended or new standards.

In its March 2016 NOPR, DOE estimated the energy consumption of commercial packaged boilers in commercial buildings and multi-family housing units by developing building samples for each of eight equipment classes examined based on the EIA's 2003 Commercial Building Energy Consumption Survey [37] (CBECS 2003) and EIA's 2009 Residential Energy Consumption Survey (RECS 2009). Further, DOE noted that it had used all the data available at the time from CBECS 2012 in its NOPR, which included only the building characteristics segment, to inform its analysis. However, the public use microdata files on consumption and expenditure required for developing building samples used in the LCC analysis were not yet released. During the March 2016 NOPR public meeting, and also in written comments, DOE received feedback regarding its continued use of CBECS 2003 data. SoCalGas and the Joint Utilities urged DOE to utilize CBECS 2012 data in its energy use analysis and shipments analysis, since the building energy use profile is expected to have changed significantly from data in CBECS 2003, noting as an example trends in commercial heating away from single large boilers and toward smaller modular boilers. They further encouraged DOE to utilize RECS 2015, should the data be released before the final rule is published. (SoCalGas, No. 77 at p. 6; Joint Utilities, No. 66 at p. 2) Raypak and AHRI also encouraged DOE to update its analysis based on CBECS 2012 data, noting several energy use characterization metrics that differ from those of CBECS 2003 (*e.g.,* percent of buildings using boilers as the main heating equipment and energy use intensity). In addition, AHRI commented that since significant changes in results could be expected if CBECS 2012 data are used in the analysis, DOE should consider publishing a corresponding supplemental NOPR. (AHRI, No. 76 at pp. 1, 2, 13, 14, 16; Raypak, No. 72 at pp. 1–2)

DOE understands the stakeholders' comments and requests and recognizes there is benefit to the use of more current data that better represents the energy use of commercial packaged boilers that would be installed in 2020 and beyond. In this final rule DOE updated its LCC model to use the EIA's 2012 CBECS microdata [38] that became available in May 2016 for developing building samples for each of the eight equipment classes examined. While it can be expected that such a change would impact the modeling results to some degree, this update was performed at the request of stakeholders. Consequently, DOE concluded that the analytical results of the final rule utilizing CBECS 2012 data are an improvement to the analysis, consistent with stakeholder requests, and do not warrant publication of an SNOPR. Further, DOE does not have any opportunity to use RECS 2015 data as the ongoing survey is currently in the data gathering stage.

1. Energy Use Characterization

DOE's energy characterization modeling approach calculates CPB energy use based on rated thermal efficiency and building heat load (BHL), accounting for the conversion from combustion efficiency to thermal efficiency where applicable, part-load operation (in the case of multi-stage equipment), and cycling losses (for single-stage equipment), as well as return water temperature (RWT) and climate zones. In this rulemaking, DOE analyzed CPB annual energy use based on the building sample, equipment efficiency characteristics, and equipment performance at part-load conditions.

In determining building heat load, DOE adjusted the building heat load to reflect the expectation that buildings in 2020 would have a somewhat different building heat load than buildings in the CBECS 2012 and RECS 2009 building sample. The adjustment involved multiplying the calculated BHL for each CBECS 2012 or RECS 2009 building by the building shell efficiency index from *AEO2016.* This factor differs for commercial and residential buildings as well as new construction and replacement buildings. Additionally, DOE also adjusted the building heat load computed from CBECS 2012 and RECS 2009 data for each sample building taking into account the relative ratio of heating degree days (HDD) for the CBECS or RECS year (2012 or 2009) to the corresponding 10 year average HDD, both averaged over the specific region of the building location. This ratio was computed using the HDD data from the National Oceanic and Atmospheric Administration (NOAA) and applied to the computed building heating load to reflect the heating load under historical average climate conditions.

For this rulemaking, DOE adjusted the rated thermal efficiency of evaluated commercial packaged boilers based on RWT, cycling losses, and part-load operation. High RWT is applied to all non-condensing boiler installations. For condensing boiler installations, low RWT is applied to all commercial packaged boilers in the new construction market, 25 percent of replacement boilers in buildings built on or after 1990, and 5 percent of replacement boilers in buildings built before 1990. DOE assumed that all other

[37] U.S. Energy Information Administration (EIA), *2003 Commercial Building Energy Consumption Survey (CBECS) Data,* (2003). (*http://www.eia.gov/consumption/commercial/data/2003/.*)

[38] U.S. Energy Information Administration (EIA), 2012 Commercial Building Energy Consumption Survey (CBECS) Data, (2012). Available at *https://www.eia.gov/consumption/commercial/data/2012/index.cfm?view=microdata.* Last accessed May 18, 2016.

condensing boiler installations are high RWT applications. The efficiency adjustment for low and high RWT is dependent on climate, with low RWT values resulting in the condensing CPB equipment operating in condensing mode, on average, and high RWT values resulting in the condensing CPB equipment operating in non-condensing mode, on average. See appendix 7B of the final rule TSD for the adjustment factors used for RWT, part-load operation, and cycling by climate zone. For commercial packaged boilers rated in combustion efficiency, DOE converted combustion efficiency to thermal efficiency. DOE used combustion and thermal efficiency data from the AHRI database to create a conversion factor that is representative of the range of commercial packaged boilers on the market.

DOE received comments in the March 2016 NOPR regarding the energy modeling approach. Regarding DOE's approach to converting combustion efficiency to thermal efficiency in the LCC model, Lochinvar commented that it is inappropriate to correlate combustion efficiency and thermal efficiency, as they are derived by two totally different test methods. (Lochinvar, Public Meeting Transcript, No. 61 at p. 127) Lochinvar further objected to DOE's approach of removing data samples it considered nonsensical (*i.e.,* combustion efficiency was reported as lower than thermal efficiency in an AHRI database entry) and suggested using the entire set of data in determining the relationship that would be more appropriate. (Lochinvar, Public Meeting Transcript, No. 61 at pp. 126–128) AHRI agreed with Lochinvar regarding the fact that combustion efficiency and thermal efficiency tests use different methods, and further commented that for any given boiler model, there definitely is a relationship between combustion efficiency and thermal efficiency, but that looking at aggregated datasets is not the way to derive a general relationship. Each model has to be looked at to sort out that relationship. (AHRI, Public Meeting Transcript, No. 61 at pp. 129–130)

DOE appreciates the comments regarding its approach to convert combustion efficiency to thermal efficiency. DOE notes that, as AHRI and Lochinvar have stated, combustion and thermal efficiencies are determined by two different methods. DOE understands the concerns of the commenters and in the final rule has reverted to consider a relationship utilizing the entire dataset available where both combustion and thermal efficiencies are reported in establishing a combustion to thermal efficiency conversion factor for the LCC analysis, with no filtering of data applied.

DOE received various comments regarding its return water temperature assumptions in its analysis. Lochinvar commented that it is overly optimistic to assume 25 percent of buildings constructed after 1990 are condensing and 100 percent of new construction is low temperature hydronic systems. (Lochinvar, Public Meeting Transcript, No. 61 at pp. 128–129) In its written comments, however, Lochinvar clarified that DOE's assumption that 25 percent of buildings constructed after 1990 will allow for condensing boilers to condense for a significant part of the season does not correlate to true market conditions and that their experience suggests the actual percentage of buildings with low-temperature heating systems is much lower. (Lochinvar, No. 70 at p. 2) Similarly, Weil-McLain commented that DOE's heat load estimation methodology overestimates true energy savings associated with condensing boilers at high return water temperature and overestimates the number of low temperature systems in existence. (Weil-McLain, No. 67 at pp. 6–7) ASAP, however, questioned DOE's assumption that in new construction a condensing boiler system would not be capable of condensing a significant portion of the time and whether it is more representative for new construction to assume that the system is always operating with low enough return water temperatures to be always in condensing mode. (ASAP, Public Meeting Transcript, No. 61 at pp. 133–134) Crown, in response to ASAP's comment regarding condensing boilers in new construction, commented that it would not be assumed that, even in new construction, condensing boilers would condense all the time, especially so, for example, on the coldest day of the year, noting that the availability of condensing mode and corresponding reset schedules depends on what emitters are used. (Crown, Public Meeting Transcript, No. 61 at pp. 134–137) ASAP added that the amount of time equipment operates in condensing mode seems conservative. (ASAP, Public Meeting Transcript, No. 61 at p. 136) Raypak further commented that condensing mode is dependent on user comfort, and that a boiler may be designed for condensing mode but if users are uncomfortable they will raise the water temperature. (Raypak, Public Meeting Transcript, No. 61 at p. 137)

In response to the comments regarding return water temperature and the time a commercial packaged boiler operates in condensing mode, DOE points out that the LCC model does not establish a given amount of time a commercial packaged boiler will condense. The model develops a thermal efficiency adjustment that is an average based on various factors as described in appendix 7B of the final rule TSD. For condensing boilers, DOE does consider the fact that some commercial packaged boilers will be operating with low return water temperatures, and the rest will operate with high return water temperatures, in the field. DOE notes that in the field, depending on the heat load and system design, the commercial packaged boiler may be operating at higher efficiencies or lower efficiencies than those established as the average adjusted efficiency in the model, but it believes its approach adequately reflects the energy use of the commercial packaged boiler throughout the entire heating season. DOE does assume that all new construction scenarios in the model (25 percent of buildings constructed on or after 1990 and 5 percent of buildings constructed before 1990) would be designed to allow for low return water temperatures, on average, and that all other scenarios would operate with high return water temperatures, on average. Regarding Lochinvar's comment that these assumptions do not correlate to true market conditions, DOE notes that neither Lochinvar, nor any other commenter, provided any data regarding the actual number of installations it expects would use low-temperature heating systems in new construction or existing buildings, but notes that DOE received additional comment indicating that even the use low temperature distribution may change over the life of the building to meet occupant comfort.

Conversely, the Joint Advocates commented that DOE's return water temperature distributions for condensing boilers represent overly conservative scenarios. Further, they point out that the default outdoor reset schedules from manufacturers of condensing boilers and real-world implementations of condensing boilers replacing non-condensing boilers suggest that condensing boilers can operate a greater portion of the heating season in condensing mode than that assumed in DOE's analysis, and that this would increase the savings from condensing boilers relative to non-condensing boilers. In support of these assertions, they cited published reports of field replacements of boilers, manufacturer data showing defaults and the range of reset schedules for condensing boilers, and various strategies in new and existing buildings

to provide lower return water temperatures to enable condensing. These strategies included retrofitting heating systems with high-delta-T heating coils, lowering the design supply hot water temperature in existing systems based on the systems being oversized for heating, showing the impact of later building improvements in reducing heating load, using a load-based reset schedule, and using variable circulation pumps supplying heated water to coils to further increase temperature drops in systems. (Joint Advocates, No. 74 at pp. 2–6)

DOE agrees with the comments from the Joint Advocates in that there is a significant potential for system retrofits and system redesigns in both new and in existing buildings that could provide for better use of low return water temperatures during a larger portion of the heating season; however, these may incur additional and unknown costs that DOE has no ability to represent on an aggregate basis. The experiences and input from other parties indicate that there is strong concern that even many current condensing boiler installations do not live up to their energy savings potential. DOE concludes that its analysis (which presumes a smaller fraction of older existing buildings, a larger fraction of newer existing buildings, and all new construction designs) will be able to support, on average, low return water temperature distribution and accurately reflects the performance of condensing commercial packaged boilers in new construction and existing building stock.

AHRI commented that the energy use analysis applies residential temperature bins to estimate the loading of commercial package boilers, which results in erroneous average annual energy use values, and AHRI provided a comparison of a typical commercial office building load profile and a residential load profile. (AHRI, No. 76 at pp. 14–15)

In response to AHRI's comment, DOE notes that the model assumes the heating load for a commercial building is zero above 50 °F. The model uses the percentage of time in a year that a given climate zone spends in each of four temperature bins that are considered for the purposes of establishing the return water temperature condition, which impacts the thermal efficiency of the boiler as installed. The temperature bins in Table 7B.2.4 in appendix 7B of the final rule TSD are only used in the development of the part-load adjustment factor for condensing boilers and not the building thermal loads. DOE, in addition, understands that the load profile shared by AHRI may reflect many larger office buildings with significant internal loading and tight thermal envelopes, such as used in the standard ASHRAE 90.1–2013 analysis for new construction. However, many existing commercial buildings will have heating loads above the 30 °F level suggested by AHRI.

For the reasons noted in this section, DOE retained its methodology for adjusting the thermal efficiencies of the commercial packaged boilers, based on return water temperature conditions, in this final rule.

During the March 2016 NOPR public meeting, Lochinvar commented that DOE should consider boilers used for purposes other than space heating in its analyses. (Lochinvar, No. 61 at pp. 124–125) Spire commented that DOE, for its analysis, should use a more robust data source, specifically referencing Jurisdiction Online [39] and added that this online data source provides information about fuel consumption, age and location of installed boilers and types of entities that own commercial boilers. (Spire, No. 73 at pp. 26–27)

In response to Lochinvar's request to include in its analysis boilers that are used for purposes other than space heating, DOE retained its NOPR approach and did not include such CPB equipment in its final rule analysis because DOE was not able to obtain any data needed for the analyses. Regarding Spire's suggestion to use Jurisdiction Online, DOE investigated that data source and determined that its content is already captured in the EPA database used to inform shipments, and as such much of the available data are already taken into account in that context.

A more detailed description of the energy use characterization approach can be found in appendix 7B of the final rule TSD.

2. Building Sample Selection and Sizing Methodology

In its energy analysis for this rulemaking, DOE's estimation of the annual energy savings of commercial packaged boilers from higher efficiency equipment alternatives relied on building sample data from CBECS 2012 and RECS 2009. CBECS 2012 includes energy consumption and building characteristic data for 6,720 commercial buildings representing 5.6 million commercial buildings. RECS 2009 includes similar data from 12,083 housing units that represent almost 113.6 million residential households.

The subset of CBECS 2012 and RECS 2009 building records used in the analysis met the following criteria. The CPB application has the following characteristics:

- Used commercial packaged boiler(s) as one of the main heating equipment components in the building,
- used a heating fuel that is natural gas (including propane and LPG) or fuel oil or a dual fuel combination of natural gas and fuel oil,
- served a building with estimated design condition building heating load exceeding the lower limit of CPB qualifying size (300,000 Btu/h),
- had a non-trivial consumption of heating fuel allocable to the commercial packaged boiler.

DOE analyzed commercial packaged boilers in the qualifying building samples. DOE disaggregated the selected sample set of commercial packaged boilers into subsets based on the fuel types (gas or oil), rated input (small or large), heating medium (steam or hot water). DOE then used these CPB subsets to group the sample buildings equipped with the same class of equipment evaluated in this analysis. In the LCC analysis, DOE used the ratio of the weighted floor space of the groups of commercial and residential building samples associated with each equipment class to determine the respective sample weights for the commercial and residential sectors. DOE's new construction sample was based on the same selection algorithms as the replacement sample but included only buildings built on or after 1990, which DOE concluded would have building characteristics more similar to the new construction buildings in the start of the analysis period in 2020 (*e.g.,* building insulation, regional distribution of the buildings, etc.).

To disaggregate a selected set of commercial packaged boilers into large and small equipment classes, DOE used a sizing methodology to determine the sizes of the commercial packaged boilers installed in the building. In this final rule, DOE's sizing methodology is essentially the same as that used in the March 2016 NOPR (*i.e.,* assigning a stepwise increasing number of commercial packaged boilers for all buildings within a range of boiler sizing loads). The stepwise assignment table developed in the March 2016 NOPR used data from an EPA boiler database [40] last updated in 2005, CBECS 1979, and CBECS 1983. The same table was used for allocating the number of boilers for older buildings constructed before 1990.

[39] *http://www.praeses.com/jurisdiction-online.html.*

[40] Environmental Protection Agency, *13 State Boiler Inspector Inventory Database with Projections (Area Sources),* EPA–HQ–OAR–2006–0790–0013, (April 2010). Available at *https://www3.epa.gov/airtoxics/boiler/boilerpg.html.*

However, for buildings of newer construction, this assignment table was modified, as DOE received new data that show the average size of boilers being smaller than the average size of the sample commercial packaged boilers in the March 2016 NOPR analysis. The sizing methodology used in this rule is described in this section.

First, the total sizing of the heating equipment is determined from the heated square footage of the building, the percentage of area heated, a uniform heating load requirement of 30 Btu/h per square foot of heated area based on references for commercial building,[41] [42] and an assumed equipment efficiency mapped to the construction year. DOE's sizing methodology also takes outdoor design conditions into consideration. The outdoor design condition for the building is based on the specific weather location of the building. The estimated total CPB sizing in million Btu per hour (MBtu/h) [43] is the aggregate heating equipment sizing prorated using the area fraction heated by the commercial packaged boilers and multiplied by an oversize factor of 1.1. For the sample of residential multi-family buildings, the heating equipment sizing methodology for commercial buildings is modified to calculate the heating load for each residential unit of the multi-family buildings, and this value is multiplied by the number of units, assuming each unit to have identical area and design heating load. The modified methodology for residential multi-family buildings further assumes that a centrally located single or a multiple-boiler installation would meet the entire design heating load of the building.

DOE computed the size of each commercial packaged boiler in each sample building by dividing the aggregate CPB sizing heating load (MBtu/h) by an estimated number of boilers of equal capacity. To estimate the number of commercial packaged boilers in a given sample building, DOE assigned a variable number of commercial packaged boilers to all the qualified sample buildings of 2012 CBECS based on a predetermined allocation table. In the final rule analysis, buildings constructed before 1990 were assigned a given number of boilers based on the allocation table developed in the March 2016 NOPR analysis. However, the remaining sample buildings, constructed on or after 1990, were assigned a given number of boilers based on a modified version of the allocation table where the percentage of building samples receiving a smaller number of boilers in a given CPB sizing load range was reduced, and the percentage of sample buildings receiving a larger number of boilers was increased, relative to their respective shares used at the March 2016 NOPR. Adjustments were made to this assignment of the number of commercial packaged boilers to maximize the utility of the sampled buildings used for this analysis with respect to the size range of boilers being analyzed.

Several interested parties commented on DOE's usage of a parameter value of 30 Btu/h per square foot for estimating the building heating load under design condition. While Spire commented that this is inappropriately high, Raypak noted that this may not be acceptable for the sizing of heating equipment for commercial buildings, although it is a decent metric for residential buildings. Raypak stated that they would normally use a value of 25 Btu/h per square foot for a commercial building in Los Angeles, California, and that they would typically use approximately 100 Btu/h per square foot for 0 °F design outdoor conditions. (Spire, No. 73 at p. 25; Raypak, No. 72 at pp. 3–4) AHRI commented that the current value of this parameter at 30 Btu/h per square foot is unverified and possibly causing the LCC model to produce excessively high operating hours and distorting the LCC results. (AHRI, No. 76 at pp. 26, 32, 37–40)

For commercial buildings, DOE's methodology for estimating the design condition heating load is uniform across all outdoor conditions. It uses a uniform heating load requirement per square foot of heated area, assuming a 0 °F design outdoor condition, and then adjusts based on the outdoor design heating temperature for the building under consideration. In addition, DOE applies an oversizing factor on top of this. DOE recognizes there are simplifications in this approach; however, DOE's estimation of building heating loads stems from design data for commercial buildings taking into account the design climate conditions and adequately captures heating load design variations in the field. DOE has high confidence that its building load estimation is representative of the building loads in the field. Therefore, DOE retained its NOPR base heating load approach in its analysis for this final rule.

AHRI also commented that the energy use calculations did not incorporate the ASHRAE 90.1–2013 requirements of all boilers with an input rate of 1,000,000 Btu/h or more needed to have a turndown ratio of 3 to 1, and this will make the boilers more efficient. (AHRI, No. 76 at p. 15)

DOE points out that it did consider the 3:1 turndown ratio requirement from ASHRAE 90.1–2013 for systems greater than 1 MMBtu/h and notes that its understanding is that this requirement in ASHRAE 90.1–2013, as adopted into local building code, will not necessarily be extended to replacement boilers, and, in addition, can be met by using multiple boilers, which is already common in DOE's analysis for boiler systems with 1 MBtu/h or above combined rated input. As noted in the March 2016 NOPR, DOE assumed that all commercial packaged boilers installed in new buildings will be part of a system with at least a 3:1 turndown ratio, and DOE calculated the adjusted thermal efficiency of commercial packaged boilers in such systems accordingly. DOE concludes that its adjusted cycling loss factors designed to address multiple boiler systems will adequately represent the expected benefits to part-load performance for multi-stage boilers, as well as the ASHRAE 90.1–2013 requirement discussed.

The Joint Advocates further noted that DOE's energy use analysis is likely underestimating potential energy savings when compared to several cited studies of field installations, and that due to the impacts of high return water temperature operation and cycling, the operational efficiency of a non-condensing boiler is below that of its rated efficiency. (Joint Advocates, No. 74 at pp. 1–2, 8) Crown commented that non-condensing boilers are not only available as single-stage and that this is especially true for large boilers. (Crown, Public Meeting Transcript, No. 61 at pp. 130–131).

In response to the comments from the Joint Advocates regarding performance degradation of non-condensing boilers, DOE notes that it does consider this in its analysis by using a cycling loss adjustment factor that takes into account the impact of multiple sequenced boilers operation. With regard to Crown's comment, DOE understands that non-condensing boilers are available in other than single stage equipment, but DOE does not have data on the relative sales into the market and has insufficient data regarding their part-load performance. DOE, however, has accounted for reduced cycling losses in cases where multiple boilers may be utilized.

[41] Bell, A.A. Jr. Part 7: Heating Load Rules of Thumb. In HVAC Equations, Data, and Rules of Thumb, McGraw-Hill: San Francisco, CA (2000).

[42] *http://www.weil-mclain.com/sites/default/files/wm-boiler-replacement-guide.pdf.*

[43] The industry commonly uses MBtu to refer to one million Btu.

In the March 2016 NOPR, DOE requested for information on the extent to which hybrid configurations with both condensing and non-condensing commercial packaged boilers in a single system are prevalent in retrofit installations. Lochinvar believes that approximately 5 percent of the installations with condensing boilers are hybrid systems and urged DOE to consider this in its energy use analysis. (Lochinvar, No. 70 at p. 2) Weil-McLain commented that creating a baseline assumption about the current degree of adoption of hybrid boiler configurations in retrofit situations is unrealistic because it requires the analysis of many variables. (Weil-McLain, No. 67 at p. 7) Bradford White commented that hybrid configurations are difficult to implement because legacy installation venting systems are already established, possibly in an era before the market debut of condensing boilers. (Bradford White, No. 68 at p. 2)

In view of the uncertainty regarding the degree of adoption of hybrid configurations in retrofit situations and the difficulty in incorporating this in the energy use analysis due to the great number of variables that would need to be considered as well as the lack of data, DOE did not incorporate hybrid systems in its analysis.

Spire commented that DOE in its analysis should consider that the Federal purchase decisions are mandated by stringent and aggressive policy mandates and as such should not be included in the analysis as they would meet the stringent standards even if stringent standards are not adopted. (Spire, No. 73 at p. 13)

DOE understands that the Federal Energy Management Program (FEMP) provides acquisition guidance for commercial packaged boilers, but also provides exceptions to these Federal purchasing requirements where an agency demonstrates that selecting the FEMP recommended efficiency level may not be cost effective. DOE notes that data provided by AHRI support that a higher percentage of the gas-fired hot water CPB market is condensing equipment than was used in the March 2016 NOPR analysis and DOE has modified in the final rule its projections for the condensing boiler market into the future to show much higher adoption rates. This higher adoption rate will include many Federal buildings. However, for the remaining fraction of the market, DOE does not have sufficient information that would allow it to make comparisons between the market shares of non-condensing commercial packaged boilers purchased for Federal buildings versus commercial buildings. In addition, DOE notes that its analysis considers as potential standards levels, commercial packaged boilers with efficiencies above the FEMP guidance, and for these reasons, DOE considers Federal buildings in its analysis.

The Gas Associations commented that the energy use analysis needs to adjust potential energy savings and associated emissions for Federal buildings that will not be able to have fossil fuel-generated energy after 2030, per provisions in Section 433 of EPCA of 1975 as amended by EISA 2007. (Gas Associations, No. 69 at pp. 2–3)

DOE notes that the legislation establishing the fossil-fuel energy targets for Federal buildings has yet to be codified as a final rule in the Code of Federal Regulations at the time of this analysis. A NOPR, titled ''Fossil Fuel-Generated Energy Consumption Reduction for New Federal Buildings and Major Renovations of Federal Buildings'' was issued on October 15, 2010 and an SNOPR issued on October 15, 2014, addressing comments on the NOPR and noting that DOE has identified additional areas for clarification and consideration that would benefit from further public comment. The SNOPR particularly sought comment on additional approaches to the scope of the requirements in the context of major renovations, the potential use of renewable energy certificates for compliance, and a proposed streamlined process for agencies to seek a downward adjustment from the required reduction levels, particularly for major renovations. DOE notes that while providing for significant savings of fossil-fuel derived energy (including both on-site usage of fossil fuels and on-site usage of electricity generated from fossil fuels) in Federal buildings, the proposed rule will not likely provide a complete limitation of fossil fuel use in Federal buildings even in 2030. Federal agencies can and may be expected to petition for downward adjustments from the required reduction levels for certain buildings and building retrofits, particularly where other options to meet the requirements are technically impracticable, where these options have been considered in detail by these agencies, and where the agencies have demonstrated they have pursued other options. In addition, the SNOPR sought input on the use of renewable energy certificates as alternative options to meet the required reduction levels, which could be a more cost-effective approach to on-site fossil fuel reduction in certain situations.

Regarding regional use of commercial packaged boilers, PEM commented that the New York City area almost entirely uses field-constructed boilers except for new construction and schools. (PEM, Public Meeting Transcript, No. 61 at pp. 122–123) Similarly, AHRI commented that it could be useful to look at geographical regions represented in RECS data and that commercial packaged boilers are not typically used in New York's multi-family apartment buildings, and that including New York City and surrounding areas in the analysis inflates this rulemaking's energy savings. (AHRI, Public Meeting Transcript, No. 61 at pp. 122, 124).

In response to the comments on regional use of commercial packaged boilers, DOE inquired with the New York City Buildings Department regarding the prevalence of field constructed boilers used in heating applications in New York City (NYC). DOE was informed by the Buildings Department that based on their experience with inspections boiler installations, only about 10 percent of the commercial packaged boilers in NYC are field-constructed with a higher fraction of those (estimated as high as about 33 percent) in the large boiler category. It was also noted by the Buildings Department that a large portion of these field constructed boilers are steam boilers. Furthermore, as was noted by PEM, there are instances where commercial packaged boilers are used in the NYC area. Given both of these considerations, DOE cannot discount that commercial packaged boilers are being utilized, or newly selected, in other types of commercial buildings including multifamily buildings in NYC and surrounding areas. Given the shipment data that form the basis for DOE's overall national energy savings analysis are based on AHRI input and do not include field-constructed boilers, DOE disagrees with AHRI that including building sample data that may have come from NYC in its analysis inflates the energy savings calculations. For these reasons, DOE did not attempt to further identify or exclude any building observations specific to NYC in its analyses.

DOE has not modified the analysis to eliminate the use of commercial packaged boilers in Federal buildings after 2030, but understands that, presuming the establishment and implementation of a final rule addressing fossil fuel-generated energy consumption in Federal buildings, the likely impact of the rule will be a reduction in overall boiler shipments to commercial buildings and a consequent

reduction in the projected energy savings from the CPB rule.

Building sampling methodology is detailed in chapter 7 of the final rule TSD.

3. Miscellaneous Energy Use

The annual energy used by commercial packaged boilers, in some cases, may include energy used for non-space heating use such as water heating. Based on comments received in the November 20, 2014 NODA and preliminary analysis, DOE assumed that if the CBECS data indicate that the CPB fuel is the same as the fuel used for water heating then in 20 percent of the sample buildings, the same commercial packaged boiler is also used for water heating in this final rule. 79 FR 69066.

Other associated energy consumption is due to electricity use by electrical components of commercial packaged boilers including circulating pump, draft inducer, igniter, and other auxiliary equipment such as condensate pumps. In evaluating electricity use, DOE considered electricity consumed by commercial packaged boilers both in active mode as well as in standby and off modes in the preliminary analysis.

BHI commented that the energy use analysis should consider that most condensing boiler installations require a minimum of two pumps: One to circulate water through the system, and a second to circulate water through the boiler itself. Further, BHI stated that if DOE were to adopt the 85-percent efficiency level and the test procedure as it was proposed in its NOPR, it would mean that there would be no Category I small or large hot water boilers on the market and therefore all such boilers would become mechanical draft and therefore require the associated power consumption. (BHI, No. 71 at p. 17)

As clarified in the March 2016 NOPR, DOE only considered the electricity use of pumps needed for proper operation of the commercial packaged boiler, but not the electricity use of additional pumps that may be necessary for distributing water throughout a system, since these pumps are not part of the commercial packaged boiler itself and the inclusion of distribution system pumping energy consumption would not be appropriate to the development of the standard. With respect to BHI's comment regarding the additional power consumption for mechanical draft equipment, DOE notes that the March 2016 NOPR analysis and the final rule analysis both include the additional electrical power consumption for both draft fans/blower, condensate pump, and controls, and that this power consumption is not included for natural draft commercial packaged boilers. Further, as noted previously, DOE has modified the CPB test procedure from that proposed in the 2016 CPB TP NOPR, and it is also adopting a different set of efficiency levels than was proposed in the March 2016 NOPR in this rulemaking. DOE's analysis adequately addresses the concerns expressed by BHI.

In its final rule analysis, DOE maintained the electricity use analysis method used in the March 2016 NOPR analysis.

F. Life-Cycle Cost and Payback Period Analysis

DOE conducted LCC and PBP analyses to evaluate the economic impacts on individual consumers of potential energy conservation standards for commercial packaged boilers. The effect of new or amended energy conservation standards on individual consumers usually involves a reduction in operating cost and an increase in purchase cost.

The LCC is the total consumer cost of owning and operating an appliance or equipment, generally over its lifetime. The LCC calculation includes total installed cost (equipment manufacturer selling price, distribution chain markups, sales tax, and installation costs), operating costs (energy, repair, and maintenance costs), equipment lifetime, and discount rate. Future operating costs are discounted to the time of purchase and summed over the lifetime of the appliance or equipment. The PBP is the amount of time (in years) it takes consumers to recover the assumed higher purchase price of more energy-efficient equipment through reduced operating costs. DOE calculates the PBP by dividing the change in total installed cost (normally higher) due to a standard by the change in annual operating cost (normally lower) that result from the standard.

For any given efficiency level, DOE measures the PBP and the change in LCC relative to an estimate of the no-new-standards case efficiency distribution. The no-new-standards estimate reflects the market in the absence of amended energy conservation standards, including market trends for equipment that exceed the current energy conservation standards.

DOE analyzed the net effect of potential amended CPB standards on consumers by calculating the LCC and PBP for each efficiency level of each sample building using the engineering performance data, the energy use data, and the markups. DOE performed the LCC and PBP analyses using a spreadsheet model combined with Crystal Ball™ (a commercially available software program used to conduct stochastic analysis using Monte Carlo simulation and probability distributions) to account for uncertainty and variability among the input variables (*e.g.,* energy prices, installation cost, and repair and maintenance costs). The spreadsheet model uses weighting factors to account for distributions of shipments to different building types and different states to generate LCC savings by efficiency level. Each Monte Carlo simulation consists of 10,000 LCC and PBP calculations using input values that are either sampled from probability distributions and building samples or characterized with single point values. The analytical results include a distribution of 10,000 data points showing the range of LCC savings and PBPs for a given efficiency level relative to the no-new-standards case efficiency forecast. In performing an iteration of the Monte Carlo simulation for a given consumer, equipment efficiency is chosen based on its probability. If the chosen equipment efficiency is greater than or equal to the efficiency of the standard level under consideration, the LCC and PBP calculation reveals that a consumer is not impacted by the standard level. By accounting for consumers that already purchase more-efficient equipment, DOE avoids overstating the potential benefits from increasing equipment efficiency.

For each considered efficiency level, DOE determines the value of the first year's energy savings by calculating the quantity of those savings in accordance with the applicable DOE test procedure and then multiplying that amount by the average energy price forecast for the year in which compliance with the amended standards would be required.

DOE calculated the LCC and PBP for all consumers of commercial packaged boilers as if each were to purchase new equipment in the first year of required compliance with new or amended standards. The projected compliance date for amended standards is late 2019. Therefore, for purposes of its analysis, DOE used January 1, 2020 as the beginning of compliance with potential amended energy standards for commercial packaged boilers.

As noted in this section, DOE's LCC and PBP analysis generates values that calculate the payback period for consumers of potential energy conservation standards, which includes, but is not limited to, the 3-year payback period contemplated under the rebuttable presumption test. However, DOE routinely conducts a full economic

analysis that considers the full range of impacts, including those to the consumer, manufacturer, Nation, and environment. The results of the full economic analysis serve as the basis for DOE to definitively evaluate the economic justification for a potential standard level (thereby supporting or rebutting the results of any preliminary determination of economic justification).

Inputs to the LCC and PBP analysis are categorized as (1) inputs for establishing the purchase cost, otherwise known as the total installed cost, and (2) inputs for calculating the operating cost (*i.e.,* energy, maintenance, and repair costs). The following sections contain brief discussions of comments on the inputs and key assumptions of DOE's LCC and PBP analysis and explain how DOE took these comments into consideration.

1. Equipment Costs

For each distribution channel, DOE derived the consumer equipment cost for the baseline equipment by multiplying the baseline equipment manufacturer sale price and the baseline overall markup (including any applicable sales tax). For each efficiency level above the baseline, DOE derived the consumer equipment cost by adding baseline equipment consumer cost to the equipment of incremental manufacturer sale price and the appropriate incremental overall markup (including any applicable sales tax). This consumer equipment cost is reflective of the representative equipment size analyzed for each equipment class in the engineering analysis. Since the LCC analysis considers consumers whose CPB capacities vary from the representative equipment size, the consumer equipment cost is adjusted to account for this.

DOE examined whether CPB equipment prices changed over time. DOE determined that there is no clear historical price trend for CPB equipment and used costs established in the engineering analysis directly for determining 2020 equipment prices for the LCC and PBP analysis.

DOE notes that it received a comment from Bradford White that the cost to manufacture a given unit increases over time, noting the increase in labor and overhead rates over time due to healthcare, utility and fuel costs, etc. (Bradford White, No. 68 at p. 5) In response, DOE wishes to clarify that its price trend analysis reflects the real, inflation adjusted, examination of equipment price, and such factors identified by Bradford White would already be incorporated in the real equipment price.

2. Installation Costs

The installation cost is the cost incurred by the consumer for installing the commercial packaged boiler. The cost of installation covers all labor and material costs associated with the replacement of an existing commercial packaged boiler or the installation of a commercial packaged boiler in a new building, removal of the existing boiler, and any applicable permit fees. DOE estimated the installation costs of the representative capacity boiler at each considered efficiency level using a variety of sources, including RS Means 2016 facilities construction cost data, manufacturer literature, and information from expert consultants.[44] DOE adjusted the basic installation cost for a boiler of a given rated input, relative to the installation cost of the representative capacity boiler, by using adjustment factors developed using trends observed in the RS Means data. Appendix 8D of the final rule TSD contains a detailed discussion of the development of installation costs and adjustment factors.

With regard to installation costs, DOE received comments from stakeholders during the March 2016 NOPR in two general areas: (1) The general cost to install a boiler, including components, labor, and accessories needed; and (2) the cost and impacts with regard to venting materials and upgrades necessary. DOE addresses both groups of comments in the following paragraphs. In addition, certain general comments reflecting the impact of high installation costs are addressed in section IV.F.2.c of this document.

a. Base Boiler Installation

DOE received several comments regarding installation costs. AHRI expressed that the costing methods used by DOE are simplistic and inaccurate, resulting in incorrect estimates of consumer economics. AHRI commented that DOE's current process of building up costs from assumed installation situations is incorrect, as has been demonstrated through contractor survey data in other rulemakings, and misses much of the subtlety in installation and venting conditions. (AHRI, No. 76 at p. 27, 42–43)

DOE understands the comments from AHRI and notes that it has modified its venting logic and installation costs in this final rule to address specific concerns brought up by stakeholders. This is discussed in detail in section IV.F.2 of this document.

PEM commented that there is no correlation between boiler cost and installation cost. (PEM, Public Meeting Transcript, No. 61 at p. 98) Raypak commented that there is probably no incremental cost associated with installing a boiler at different efficiency levels, for example an 82 percent efficient boiler versus an 86 percent efficient boiler. However, there will be cost differential for replacement parts. (Raypak, Public Meeting Transcript, No. 61 at p. 101) ABMA commented that larger boilers not only have significantly different applications and features but also carry an exponentially higher cost for transportation, installation, and start-up. ABMA also commented that in attempting to develop installation costs, it is important that the magnitude of work involved in installing the large and very large boilers is greater than that for small and light weight boilers and may involve the use of fork lifts and delivery trucks, and that these are extra expenses and as such should not be based on extrapolating the installation cost of smaller boilers. (ABMA, No. 64 at pp. 1–2) ABMA expressed concerns regarding the extrapolation of RS Means data for small boilers into large boilers, and wonders if a more appropriate set of estimating data had been considered, noting Mechanical Contractors Association of America (MCAA) as a potential source. (ABMA, No. 64 at p. 1)

Regarding PEM's comment, DOE notes that the installation costs are derived directly from RS Means 2016 Mechanical Cost Data, which indicates a strong correlation between boiler size and its installation cost. With respect to Raypak's comment that there is no incremental cost for installing boilers at different efficiency levels, DOE's estimated basic installation costs for the commercial packaged boilers at different efficiency levels, within an equipment class, do not vary with efficiency, except for condensing boilers where additional costs are incurred specific to such installations. With respect to Raypak's comment about repair costs, DOE notes that its annualized repair cost estimates do increase with efficiency. Regarding ABMA's comment about very large boilers, DOE reiterates that very large boiler equipment classes (>10 MBtu/h) are not being analyzed in this rulemaking. With regard to installation cost differences because of transportation, magnitude of work, and use of extra equipment for large boilers, DOE notes that RS Means captures these costs in its estimation of basic installation costs and, as such, DOE is not changing the base installation cost

[44] RS Means, *Facilities Maintenance & Repair Cost Data 2015,* 73rd ed (2014).

approach in this final rule. However, DOE notes that, at the March 2016 NOPR stage, for each equipment class, the installation cost was estimated only for the representative rated input. For the final rule, DOE incorporated an adjustment factor based on trends noted in RS Means that would scale the basic installation cost up or down, depending on the capacity of the chosen boiler to more accurately reflect the absolute cost for installation of the selected boiler in this analysis. Although this is a modification to the general approach, the incremental cost from the baseline does not change, and thus this change does not have any impact on the LCC savings. With respect to MCAA, DOE explored this source as a possible alternative and more appropriate data source. Based on conversations with MCAA, DOE learned that MCAA data is not derived from time studies, but is an empirical approach, and that MCAA recommends utilizing one of their affiliate companies which utilize their data to determine the time requirements to complete a task, rather than directly referencing their data. DOE inquired of MCAA regarding the comparison between MCAA and RS Means data, and was informed that while methods take different approaches, both data sets are accurate. DOE has determined that RS Means can serve as an appropriate source of estimating data for this rulemaking and has updated the data sources in this analysis to RS Means 2016.

BHI commented that DOE has not considered that most condensing boilers require two pumps, an associated ''primary-secondary'' piping system, and ''Y strainers'' to keep out system sediment. BHI noted that only in some cases pump(s) are supplied with the boiler while the piping system upgrade is carried out by the installer. (BHI, No. 71 at p. 18)

In response to comments from BHI, DOE notes that such system costs may be incurred by a consumer as part of a heating system upgrade, which DOE understands could result in condensing commercial packaged boilers operating at higher efficiencies, on average. DOE considers in its analysis that many, if not most, boilers (*e.g.,* 95% of cases for buildings built before 1990) in a standards-case scenario may be installed in systems that do not provide for low return water temperature conditions, on average, and are thus assigned high return water temperature operating conditions. As such, DOE already takes into account the impact to the consumer, in terms of lost potential for additional energy savings, of using an unmodified distribution system when it assigns a high return water temperature condition in those cases. Regarding inclusion of the Y-strainer cost in the installation cost, DOE is aware that some CPB manufacturers, both condensing and non-condensing, may recommend the use of a Y-strainer or dirt separator for the purpose of dirt elimination, but did not identify requirements for this technology. DOE observed that a large percentage of condensing CPB equipment manuals recommend the use of Y-strainers, but also notes that many existing CPB systems may already have one installed. As such, DOE included in its analysis the cost of a Y-strainer in an incremental manner for condensing commercial packaged boilers. For CPB equipment classes that contain condensing equipment, DOE's analysis includes a 33 percent higher incidence of Y-strainer usage with condensing equipment.

b. Venting

Crown commented that proposed standard levels for some boilers rule out Category I chimney venting and therefore make boiler installation in certain areas not cost effective. (Crown, No. 61 at p. 13) Other commenters noted that the proposed standards would eliminate the possibility of cheaper Category I venting. Weil-McLain noted that proposed standards will create the need to install new venting systems, essentially eliminate Category III boilers, operate higher power boiler pumps, and operate venting blowers/fans that are necessary for most condensing and near-condensing equipment to operate and safely vent flue gases. (Crown, No. 61 at p. 148; Raypak, No. 61 at p. 145–146; Weil-McLain, No. 67 at pp. 2, 6) AHRI noted that the installation codes that apply to gas and oil boilers today are significantly different from those that existed 50 or 60 years ago. The installation codes are currently more detailed and specific and recognize that boilers operating at steady state efficiencies in the mid-1980s represent the near condensing range of efficiency and that the venting requirements are determined accordingly. (AHRI, No. 76 at p. 15–16) Weil-McLain notes that DOE's own analysis shows very few equipment offerings at near-condensing efficiencies, and that this is because the market has determined that it is not economically feasible to install such commercial packaged boilers due to higher cost of venting. (Weil-McLain, No. 67 at p. 3) Raypak noted that even though boilers with 85-percent E_T (or 85-percent E_C) are available in the market, DOE should not assume that all boiler installations will be capable of having these commercial packaged boilers installed and safely operated. (Raypak, No. 72 at p. 3)

DOE understands the concerns from stakeholders and notes that the standards being adopted in this final rule, and more particularly the adopted standard for SGHW CPB equipment, are lower than that proposed during the March 2016 NOPR. Further, revisions made to the proposed test procedure (81 FR 89276, 89289–89290 (December 9, 2016)) address significant concerns raised by stakeholders regarding potential impact on ratings. Notwithstanding this, DOE recognizes that under the adopted standards, there may be migration between Category I boilers and other boiler categories. However, DOE does not believe that the standard being adopted eliminates all Category I equipment, based on their existence in the market at these efficiency levels. Furthermore, AHRI's own data demonstrates that, with regard to gas-fired hot water boilers, efficiencies between 85-percent and 86-percent E_T and E_C for small and large hot water boilers, respectively, represent a maximum in the efficiency distributions of models provided to DOE. (AHRI, No. 76 at p. 16) DOE has determined that the efficiency levels being adopted in this rulemaking have adequately considered stakeholder comments. DOE has subsequently refined its analysis and considers that the standards being adopted in this final rule are justified.

DOE received multiple comments regarding its handling of venting costs, in particular those associated with 85-percent efficient boiler systems. Raypak commented that replacing existing boilers lower than 85-percent efficiency will require new venting and that DOE should take the associated costs into account. (Raypak, No. 61 at p. 153, 155) Crown commented that every commercial install at 85-percent efficiency will get a different venting system. (Crown, No. 61 at p. 152) NEEA noted that some existing boilers that have greater than 85-percent efficiency would already have venting that would not need replacing, and that the DOE's analysis takes that into account, to which Raypak agreed that systems with boilers of 85-percent efficiency and above would not require venting upgrades in such cases. (NEEA, No. 61 at p. 154; Raypak, No. 61 at p. 155) BHI commented that the costs of vent systems will increase far more than reflected in the cost estimates in the DOE models, as a result of a shift away from Category I vent systems. (BHI, No. 71 at p. 2, 7, 10, and 11) Weil-McLain

noted that qualified contractors will want to make sure that a replacement boiler is safely installed and should require the additional steps needed for those installations that are on the near-condensing/condensing efficiency borderline, and that this imposes significant costs. (Weil-McLain, No. 67 at p. 2)

Relative to the March 2016 NOPR public meeting comments, DOE notes that in its analysis it does consider the potential for a boiler to be replaced that is already at or above the 85-percent efficiency level, and that the venting costs would be lower in such a scenario when compared with a similar scenario where the existing boiler being replaced is below 85-percent efficiency. Further, DOE has considered venting costs that would result in safe installation of commercial packaged boilers at all efficiency levels in its analysis, refining the LCC model to select materials for venting that represent the concerns of stakeholders.

BHI and AHRI commented on DOE's venting logic that allowed lower cost Category-I/III venting options for SGHW commercial packaged boilers at the 85-percent efficiency level proposed by DOE in the NOPR. BHI also noted that 85-percent efficiency non-condensing boilers may result in operation in the Category II/IV regime instead of Category I/III assumed by DOE. (BHI, No. 71 at p. 8–10; AHRI, No. 76 at p. 16) AHRI expressed similar concerns that a Category II/IV vent may be needed for gas boilers in the 83.5-percent to 85-percent efficiency levels. (AHRI, No. 76 at p. 16) BHI further commented that even some Category III boilers must be vented with expensive stainless steel option (*i.e.,* AL29–4C), particularly for small commercial packaged boilers. (BHI, No. 71 at p. 18). Lochinvar commented that venting at 85-percent efficiency level should be assumed to be corrosion resistant, a position they say is shared by Raypak and Crown Boiler. (Lochinvar, No. 70 at p. 3) Crown also noted that anything above 85-percent thermal efficiency would not be an option for Category I venting. (Crown, No. 61 at p. 148). Crown commented that even if newer high-efficiency boilers do not need their full vent system replaced, they are going to need terminals, vent adaptors, and gaskets replaced. (Crown, No. 61 at p. 158) AHRI questioned whether 8-inch PVC venting was available on the market. (AHRI, No. 61 at p. 150–151)

In response to comments received, DOE included upgrades to stainless steel venting materials, in some cases selecting AL29–4C, for non-condensing boilers at the 85-percent efficiency level and included, in the case of small gas-fired commercial packaged boilers, a cost transition at 84% efficiency which reflects the cost of mechanically vented CPB equipment where natural draft equipment remains available on the market. This latter approach is conservative with regard to overall installation costs. Analysis of the market efficiencies continues to show that there are Category I small gas-fired commercial packaged boilers at the 85-percent efficiency level, and not all equipment will transition to mechanically vented equipment. As noted previously, however, DOE is adopting in this final rule an 84-percent E_T level for SGHW and 85-percent E_C level for LGHW, and this, in conjunction with the aforementioned modifications to DOE's test procedure final rule (81 FR 89276, (December 9, 2016)), will address many of the concerns of stakeholders regarding the standard levels that were being proposed in the NOPR. In response to Lochinvar's comment about costs incurred even when a full vent system is not replaced, DOE does consider partial costs for venting in its final rule analysis in cases where a vent is determined to be re-usable by replacing a portion of the existing venting system. The details of these costs may be found in appendix 8D of the final rule TSD. With respect to AHRI's question about 8-inch PVC venting availability, DOE notes that at the time the March 2016 NOPR model was developed, DOE was aware of manufacturers that specified 8-inch PVC venting for commercial packaged boilers. However, DOE has revised the venting logic in its final rule to not consider plastic venting on or above 8-inch diameter in order to better reflect typical industry venting practices.

DOE received several comments regarding special situations that require consideration in DOE's venting logic. AHRI commented that the vent systems in older buildings may be of excessive length and convoluted configuration to properly vent by natural draft an 85-percent efficient gas fired commercial packaged boiler, or oil-fired hot water boiler at the 86-percent and 87-percent efficiency levels. (AHRI, No. 76 at p. 1, 15–16, and 26–27) Weil-McLain commented that retrofitting an existing building with a condensing commercial packaged boiler usually involves running venting over extended lengths and usually becomes prohibitively expensive. Weil-McLain further expressed doubts whether DOE's installation cost model has captured all costs, including additional components, venting materials and system engineering/design costs. (Weil-McLain, No. 67 at p. 2, 7) BHI noted that multiple-boiler installations requiring Category III or IV venting are required to have dedicated venting for each boiler, effectively multiplying the cost several times. (BHI, No. 71 at p. 13) In the same note, Lochinvar commented that CPB installations with condensing boilers often require the vent system to be engineered and noted that DOE in its cost model should include custom engineering fees for these systems. (Lochinvar, No. 70 at p. 3) Crown commented that there are terra-cotta lined chimneys that are allowed to use Category I equipment, but the modeling assumption assumes they will need a B-vent. (Crown, No. 61 at p. 148) Spire commented that the effect of the proposed standard would be to eliminate natural vent gas-fired boilers, which can impose substantial additional costs. (Spire, No. 73 at p. 24) BHI cites various requirements and restrictions regarding horizontal venting that may make it difficult to horizontally vent Category III or IV gas-fired commercial packaged boilers in many cases. (BHI, No. 71 at p. 12–13)

In response to comments about common venting, DOE notes that, while model does not explicitly address common venting, DOE has not received any data on the relative prevalence of common vented Category I boilers on the market. In addition, DOE notes that its analysis, which presumes individually vented boilers, also presumes that in the case of boiler replacements, where needed a venting replacement is done for each boiler in the building individually—a cost which may, in effect, exceed that of replacing a single common vent in a multiple boiler installation. Given the lack of detail in the relative frequency of common venting and the potential additional costs that DOE's method incurs, DOE feels that its approach is adequate for its analysis. With respect to the comments about terra-cotta lined chimneys, DOE concludes that due to the relative costs of lining chimney with terra-cotta liners, as opposed to metal liners, the latter would be much more reflective of the option selected in the current replacement boiler market. More broadly, the general comments noted herein have been mitigated by DOE's adoption of an 84-percent level for SGHW CPB equipment, which is lower than that presented at the March 2016 NOPR.

BHI commented that DOE needs to include the additional installation costs associated with complete replacement

of ''orphan water heaters'' [45] (*i.e.,* not just vent modifications) on a fraction of installations. (BHI, No. 71 at p. 18)

DOE notes that it does not have data on the relevant frequency of boiler vent systems that are also used to vent water heaters, but received comment at the preliminary analysis stage on this issue. DOE notes that the primary application of common venting is with category I equipment. Comments on the frequency were inconsistent; however, AHRI stated that they believed that common venting of commercial boilers and commercial water heaters may in fact be relatively rare given the size mismatch between commercial boilers and commercial water heaters, such that common venting would be more than problematic because the common vent size would be so large that when the boiler wasn't firing there would be venting problems on the water heater. (AHRI, Public Meeting Transcript, No. 39 at pp. 140–141). Based on input from AHRI, common venting with water heaters would be negligible for large CPB equipment and would be uncommon for small CPB equipment. For small CPB equipment, to the extent that common venting with water heaters does occur, the standards adopted in this final rule and the revisions made to and adopted in DOE's CPB test procedure final rule will allow the continued use of Category I commercial packaged boilers in many commonly vented systems and thus remove concerns with orphaned water heaters in common vented systems.

DOE received various comments regarding the safety of venting options used in the NOPR analysis. AHRI commented that a variety of venting installation issues arise as potential standards are at, or near, condensing levels and noted that both manufacturers and installers use caution in their venting installation (AHRI, No. 76 at p. 42–43) BHI commented that DOE's proposed standards for SGHW and LGHW boilers demonstrates insufficient consideration for the safety consequences of attempting to vent gas-fired boilers at this efficiency level into some chimneys in full compliance with nationally recognized safety standards, such as the National Fuel Gas Code. Further, BHI commented that DOE needs to weigh carefully the levels at which it sets minimum efficiency standards so that it does not inadvertently tip across a technology divide, creating: Serious increased costs to the consumer, the application of marginal technology (which is beyond the control of the manufacturer), utility issues, and even safety issues. (BHI, No. 71 at p. 2, 7, 10, and 11) BHI posits that many of the same issues regarding venting of gas-fired boilers apply to oil-fired boilers at the efficiency levels proposed, and that it is unaware of any analysis performed by DOE to evaluate the effect of the proposed levels for oil-fired hot water and steam commercial packaged boilers to safely and cost-effectively vent oil boilers into existing chimneys. (BHI, No. 71 at p. 16) BHI commented that with an 85-percent gas-fired hot water boiler standard there are too many potential installations which breach acceptable safety levels (*e.g.,* reduction in flue gas buoyancy, operation closer to flue gas dew point, flue gas leakage into the structure as a result of inadequate draft and/or vent system deterioration), and responsible manufacturers and installers will not install 85-percent boilers in these situations and will force consumers into condensing equipment. (BHI, No. 71 at p. 7, 10)

With respect to the comments from AHRI, DOE concludes that CPB equipment manufacturers will provide adequate guidance for installers to ensure that the venting system is safe, and that the installers used to install commercial packaged boilers and their associated vent systems will follow such guidance, and leverage their expertise, to mitigate the dangers of potential corrosion issues. With respect to venting costs, DOE notes that it reviewed and updated the venting costs in the LCC model based on comments and data received from stakeholders and believes that its analysis is now more representative of the costs associated with near-condensing and condensing CPB equipment. Regarding BHI's comments that DOE needs to weigh carefully the levels at which it sets its minimum efficiency standards, DOE's analysis weighs carefully the costs and other issues associated with setting a minimum efficiency standard in this rulemaking, and has been conducted in an open and transparent manner, incorporating input from interested parties throughout this rulemaking. Furthermore, because there are manufacturers actively manufacturing and marketing equipment within the efficiency range in question, both natural draft and mechanical draft, DOE must evaluate and consider such efficiency levels as options within the analysis. Manufacturers are not required to provide equipment at any specific efficiency level, only that equipment must meet or exceed the minimum efficiency level for the equipment class under consideration. Relative to BHI's comment about oil-fired boilers having similar venting issues as gas boilers at the efficiency levels proposed and not being aware of any analysis by DOE to ensure safe and cost-effective venting of oil boilers into existing chimneys, DOE points out that it has considered the cost to remove and replace a chimney with adequate venting for both gas-fired and oil-fired boilers when necessary. As such, it has considered the economic cost to the consumer to ensure safe venting of the commercial packaged boilers.

Several commenters noted the impact of building codes on type of venting allowed in the installation of condensing units. Bradford White expressed reservation that DOE's installation cost model may not address strict installation codes for CPB installations of high rise buildings in New York, Boston and Chicago. (Bradford White, No. 68 at p. 3) BHI commented that many manufacturers and installers do not view practices that are technically possible and may meet the letter of some building codes as safe. While these margins of safety can evolve as manufacturers and installers gain more experience, there will always be a point where a manufacturer will set installation requirements or installers will set practices such that a ''technically compliant'' installation will not be allowed. (BHI, No. 71 at p. 7) In addition, DOE received comment from Raypak that until regulations regarding boiler maintenance in the United States achieve a level of sophistication and stringency similar to those in Europe to ensure that the boilers will operate properly, safely and efficiently, the minimum efficiency levels proposed could result in unsafe and dangerous installations. (Raypak, No. 72 at p. 3) Lochinvar noted that some jurisdictions have enacted rules that prevent installation of non-metallic vents and estimates that the installation costs for approximately 5 percent of installations nationwide that would have selected PVC venting should be recalculated to needing to select AL29–4C instead, as a result. (Lochinvar, No. 70 at p. 3)

With regard to the impact of building codes on the installation of new and replacement boilers, DOE understands that local building codes can have specific and unique requirements regarding termination of venting, both for condensing and for non-condensing CPB equipment that can affect costs. However, due to the localized and building-specific aspects of these

[45] A service hot water heater that shared a vent with a boiler is said to be ''orphaned'' when a high efficiency boiler is installed with which it can no longer share such vent.

requirements, DOE has no ability to quantify their impact on its analysis. DOE notes, however, that it is not adopting any condensing levels in this final rule that would precipitate these costs. DOE notes, with regard to boiler maintenance, that while commercial packaged boilers in the United States may not have national regulations requiring annual boiler inspections and service, many local jurisdictions require safety inspections. Furthermore, it is in the interest of commercial entities using CPB equipment to continue to operate equipment in a safe manner. DOE concludes that equipment at the efficiency levels in its final rule can be installed and operated safely over the life of the equipment. Regarding Lochinvar's comment that approximately 5 percent of installations that would have selected PVC venting should be recalculated as having needed to select AL29–4C due to jurisdictions that may not permit the use of non-metallic vents, DOE notes that its analysis already assigns a 50 percent probability, for vent sizes in the 4-inch to less than 8-inch range, that venting materials for condensing boiler installations will be using AL29–4C. DOE understands that for the smallest boilers, it did not include a probability, however small (*i.e.,* 5 percent), that a consumer might be required to utilize AL29–4C, but as noted above DOE is not adopting a condensing level in this final rule and the marginal incremental cost that would have been associated with this factor would not have impacted the standard levels adopted.

c. Other

AHRI urged DOE to avoid standards that would require difficult and costly installations, or that would remove equipment technologies that are used in the market place to meet consumer requirements, until it has a clear understanding of installation issues via a survey of buildings. (AHRI, No. 76 at p. 44). Spire stated that the end result of the proposed standards would skew the market in favor of electrical equipment over gas-fired equipment based on what Spire referred to as ''an apparent and unrealistic theory'' that these electric boilers will be powered by renewable energy in the distant future. Spire added that ''this does not just lessen competition; it eliminates competition by eliminating the main alternative to electricity.'' (Spire, No. 73 at p. 30)

Regarding AHRI's comment, DOE understands the potential for difficult and costly installations at all efficiency levels, and accounts for a wide variation in costs in installations through consideration of varying vent lengths and base case conditions in its Monte Carlo analysis. DOE disagrees with Spire's contention that revised standards, such as those proposed during the March 2016 NOPR, eliminate competition by eliminating use of the main alternative to electricity. The standards adopted in this final rule are readily available on the market through most, if not all, CPB manufacturers, and higher efficiency levels are in fact being readily incorporated in the existing market. This standard will not eliminate the use of gas in commercial buildings.

See chapter 8 and appendix 8D of the final rule TSD for details on DOE's analysis of installation costs including venting costs.

3. Annual Per-Unit Energy Consumption

DOE estimated annual natural gas, fuel oil, and electricity consumed by each class of CPB equipment, at each considered efficiency level, based on the energy use analysis described in section IV.E of this document and in chapter 7 of the final rule TSD.

DOE conducted a literature review on the direct rebound effect in commercial buildings, and found very few studies, especially with regard to space heating and cooling. In a paper from 1993, Nadel describes several studies on takeback in the wake of utility lighting efficiency programs in the commercial and industrial sectors.[46] The findings suggest that in general the rebound associated with lighting efficiency programs in the commercial and industrial sectors is very small.[47] In a 1995 paper, Eto *et al.*[48] state that changes in energy service levels after efficiency programs have been implemented have not been studied systematically for the commercial sector. They state that while pre-/post-billing analyses can implicitly pick up the energy use impacts of amenity changes resulting from program participation, the effect is usually impossible to isolate. A number of programs attempted to identify changes in energy service levels through consumer surveys. Five concluded that there was no evidence of takeback, while two estimated small amounts of takeback for specific end uses, usually less than 10-percent. A recent paper by Qiu,[49] which describes a model of technology adoption and subsequent energy demand in the commercial building sector, does not present specific rebound percentages, but the author notes that compared with the residential sector, rebound effects are smaller in the commercial building sector. An important reason for this is that in contrast to residential heating and cooling, HVAC operation adjustment in commercial buildings is driven primarily by building managers or owners. The comfort conditions are already established in order to satisfy the occupants, and they are unlikely to change due to installation of higher-efficiency equipment. While it is possible that a small degree of rebound could occur for higher-efficiency commercial packaged boilers, *e.g.,* building managers may choose to increase the operation time of these heating units, there is no basis to select a specific value. Because the available information suggests that any rebound would be small to negligible, DOE did not include a rebound effect for this rule.

During the March 2016 NOPR, DOE requested comments and data on the assumption that a rebound effect is unlikely to occur for these commercial applications. ASAP, Bradford White, Lochinvar, the Joint Utilities, SoCalGas, and Weil-McLain agreed with DOE's findings that a rebound effect is unlikely to occur for commercial packaged boilers. Weil-McLain added that even if it did occur, it would be at insignificant levels. (ASAP, Public Meeting Transcript, No. 61 at p. 178; Bradford White, No. 68 at p. 2; Lochinvar, No. 70 at p. 3; Joint Utilities, No. 65 at p. 2; SoCalGas, No. 77 at pp. 5–6; Weil-McLain, No. 67 at p. 8)

DOE appreciates the comments provided by stakeholders with respect to rebound effect for CPB equipment, and notes that it has not applied a rebound effect in this final rule.

4. Energy Prices and Energy Price Trends

DOE derived average monthly energy prices for a number of geographic areas in the United States using the latest data from EIA and monthly energy price factors that it develops. The process then assigned an appropriate energy

[46] S. Nadel, The Take-back Effect: Fact or Fiction? Conference paper: American Council for an Energy-Efficient Economy, (1993).

[47] The rebound effect accounts for increased usage of equipment by consumers after the implementation of a standard, reducing the energy savings attributed to a standard. That is, the savings from energy-efficient equipment may lead to additional use of that equipment. However, the take-back in energy consumption associated with the rebound effect generally provides consumers with increased value.

[48] Eto *et al.,* Where Did the Money Go? The Cost and Performance of the Largest Commercial Sector DSM Programs. LBL–38201, Lawrence Berkeley National Laboratory, Berkeley, CA (1995).

[49] Y. Qui, Energy Efficiency and Rebound Effects: An Econometric Analysis of Energy Demand in the Commercial Building Sector, Environmental and Resource Economics, 59(2): 295–335 (2014).

price to each commercial and residential building in the sample based on its location. DOE derived 2015 annual electricity prices from EIA Form 826 data.[50] DOE obtained the data for natural gas prices from EIA's Natural Gas Navigator, which includes monthly natural gas prices by state for residential, commercial, and industrial consumers.[51] DOE collected 2014 average commercial fuel oil prices from the consumption, price, and expenditure estimates from the EIA's State Energy Data System (SEDS) and adjusts it using GDP Implicit Price Deflator factors to reflect 2015 prices.[52] DOE developed the LCC analysis using a marginal fuel price approach to convert fuel savings into corresponding financial benefits for the different equipment classes. This approach was based on the development of marginal price factors for gas and electric fuels based on historical data relating monthly expenditures and consumption. For details of DOE's marginal fuel price approach, see chapter 8 of the final rule TSD.

To arrive at prices in future years, DOE multiplied the marginal fuel prices by the projection of annual average price changes in *AEO2016,* which has an end year of 2040. To estimate the trend after 2040, DOE uses the average rate of change during 2030–2040.

DOE received comments on marginal prices and, in particular, on the accuracy of the tariff rates paid by larger load consumers. The Gas Associations commented that the analysis should adjust the energy price calculation methodology using marginal prices to a use a tariff-based approach to make the analysis more robust. (Gas Associations, No. 69 at p. 3) Spire commented that DOE used erroneous utility marginal energy pricing and forecasts in its analysis resulting in overstated benefits. (Spire, No. 73 at pp. 17–19) AHRI asked if consumers with large loads pay the same marginal rates as an average commercial consumer, and Spire responded that they do not and referenced their comment submission in the Residential Furnaces NOPR. (AHRI, Public Meeting Transcript, No. 61 at p. 171; Spire/Laclede, Public Meeting Transcript, No. 61 at p. 171) PG&E agreed with Spire that larger consumers pay less for utilities. (PG&E, Public Meeting Transcript, No. 61 at p. 172) AHRI commented that the marginal gas rates do not accurately reflect what larger consumers pay. (AHRI, Public Meeting Transcript, No. 61 at p. 172) Spire commented that EIA data is completely inaccurate for its largest consumers and that transport rates are typically used. (Spire/Laclede, Public Meeting Transcript, No. 61 at p. 172) PEM commented that the largest consumers also hedge gas prices by buying and selling futures and noted that it is extremely difficult to figure out what the true cost of the energy is, also pointing out that there are consumers utilizing interruptible service accounts. (PEM, Public Meeting Transcript, No. 61 at p. 173) Spire commented that DOE could accurately reflect the marginal prices large consumers pay by looking at the incremental cost per therm [53] in hedge contracts. (Spire/Laclede, Public Meeting Transcript, No. 61 at p. 173)

DOE appreciates the stakeholders comments on the energy prices used in the economic analysis. EIA historical energy prices and *AEO* price trends are the best aggregate sources for energy prices currently available to DOE. DOE understands the importance of accurately representing the energy prices for the consumers in the economic analysis and incorporates many adjustment factors to the average price data and the price trend data to account for the price differences due to variations in locations, seasons, and market sectors and to ensure that the energy prices are properly accounted for in the economic analysis.

Lastly, AHRI commented that the exclusion of dual-fuel capable boilers overstates the effective prices for natural gas since consumers can make use of interruptible natural gas rates. (AHRI, No. 76 at p. 42)

With regard to consumers who may be on interruptible rates, DOE examined CBECS 2012 ''consumption and expenditure'' data and observed that the weighted average cost of natural gas for buildings with commercial packaged boilers using both natural gas and fuel oil is lower by about 6.5 percent compared to the average natural gas price for ''gas only'' buildings. This compares well with a similar statistic referenced by AHRI, who posited that the use of ''interruptible supply'' contracts by consumers would result in rates that result in a 7-percent savings versus ''uninterruptible supply'' rates. Since 95 percent of these observations had gas as the principal fuel, and given that no separate equipment class exists for dual fuel boilers, DOE counted them as gas boilers. However these boilers contribute only 3.5 percent to the total gas boiler sample weights used in the LCC analysis. DOE also noted that nearly 67 percent of the sample buildings using both gas and oil continue to use significant quantities of the higher cost fuel oil, which more than offsets a 7-percent reduction in the natural gas price paid. Further, DOE used gas price data from EIA in its LCC analysis and notes that these prices are based on aggregate revenue and sales, which already include sales for both interruptible and uninterruptible supply. In view of the above, DOE did not pursue development of separate gas price estimates for consumers using dual fuel boilers.

Appendix 8C of the final rule TSD includes more details on energy prices and trends.

5. Maintenance Costs

The maintenance cost is the routine cost incurred by the consumer for maintaining equipment operation. The maintenance cost depends on CPB capacity and heating medium (hot water or steam). DOE used the most recent RS Means Facility Maintenance and Repair Cost Data to determine labor and materials costs and maintenance frequency associated with each maintenance task for each CPB equipment class analyzed.[54] Within an equipment class, DOE assumed that the maintenance cost is the same at all non-condensing efficiency levels, and that the maintenance cost at condensing efficiency levels is slightly higher.

Raypak commented that their Service Department has estimated that approximately 5 percent of current technicians are capable of servicing new technology, higher efficiency equipment, and that DOE should account for this in its rulemaking process. (Raypak, No. 72 at p. 3) DOE notes that in comments received in the November 20, 2014 NODA and preliminary analysis, Raypak commented that although they do not have specific data, they believe that the vast majority of maintenance/service is performed by manufacturer factory-trained personnel due to the specialized equipment and expertise required to properly diagnose and repair current commercial packaged boilers. (Raypak,

[50] U.S. Energy Information Administration, *Form EIA–826 Monthly Electric Utility Sales and Revenue Report with State Distributions* (EIA–826 Sales and Revenue Spreadsheets). Available at *http://www.eia.gov/electricity/data/eia826/.*

[51] U.S. Energy Information Administration, *Natural Gas Prices.* Available at: *http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PCS_DMcf_a.htm.*

[52] Source: GDP Implicit Price Deflator factors derived from U.S. Department of Commerce, Bureau of Economic Analysis. Available at *http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1.*

[53] A therm is a unit of heat equivalent to 100,000 Btu or 1.055×10^8 joules.

[54] RS Means, 2016 Facilities Maintenance & Repair Cost Data. Available at: *http://rsmeans.com/60305.aspx.*

No. 35 at p. 5) AHRI similarly noted that the industry trend for boiler maintenance is toward using external contractors who specialize in servicing advanced design boilers or boiler systems. (AHRI, No. 37 at p. 5)

DOE understands that with any change in technology, there will be an adjustment time needed to develop the skills and expertise within the workforce to adequately service and maintain such technology. However, the comments received at preliminary analysis indicated that the maintenance and service markets were already in transition and DOE does not believe that there is basis for presuming that the service market would not adapt under a new standard scenario at any of the efficiency levels considered.

ABMA commented that the maintenance tasks for large boilers may be more involved and may need to be performed from a ladder or catwalk and as such, the maintenance cost should not be based on extrapolating the maintenance cost for smaller boilers. (ABMA, No. 64 at pp. 2–3)

DOE's LCC model does attempt to develop a maintenance cost for large boilers using data for multiple size categories found in the RS Means Facilities Maintenance and Repair Data manual, recognizing that some tasks may be more involved for larger boilers, as noted by ABMA. The largest size category referenced did not have an upper size limit, but DOE believes that the DOE developed costs, which extrapolates costs for commercial packaged boilers beyond the largest size category available from RS Means, are likely more appropriate for the large CPB equipment classes. However, DOE notes that there is no difference in maintenance cost for a given size boiler based on its efficiency, with the exception that condensing boilers have a slight incremental cost due to condensate neutralizer replacement and thus the magnitude of the maintenance cost would not play a significant role in the LCC savings analysis. DOE concludes that its maintenance approach and costs for larger boilers is appropriate for this rulemaking.

Appendix 8E of the final rule TSD includes more details on maintenance costs.

6. Repair Costs

The repair cost is the cost to the commercial consumer for replacing or repairing components that have failed in the commercial packaged boiler (such as the ignition, controls, heat exchanger, mechanical vent damper, or power vent blower). DOE used the latest version of the RS Means Facility Maintenance and Repair Cost Data to determine labor and materials costs associated with repairing each CPB equipment class analyzed.

DOE sought input from manufacturers regarding the representativeness of using 1-year as warranty for parts and labor and 10-years as warranty for the heat exchanger and received comments from interested parties. Crown commented that manufacturer warranties are a good metric for equipment lifetime and suggested condensing and non-condensing boilers have very different warranties. Further, Crown noted that many warranties are prorated so that a 10-year warranty might actually be a 5-year warranty with 5 years of pro-rated warranty coverage. (Crown, Public Meeting Transcript, No. 61 at pp. 165–166) Raypak commented that many manufacturers do not include labor as part of their warranties, and that a 1-year warranty on the heat-exchanger might be more appropriate. (Raypak, Public Meeting Transcript, No. 61 at p. 163) However, ABMA commented that 5-years may be a better warranty period for heat exchangers especially for larger sizes (ABMA, Public Meeting Transcript, No. 61 at pp. 162–163) and both Bradford White and Lochinvar agreed with DOE's assumptions regarding warranties, adding that the heat exchanger warranty can be prorated for a period of time beyond the non-prorated warranty period. (Bradford White, No. 68 at p. 2, Lochinvar, No. 70 at p. 3)

DOE reviewed the warranty terms of various manufacturers and determined that the vast majority of manufacturers offer at least ten years of coverage for heat exchangers and that both condensing and non-condensing warranties may use prorating as part of their terms. Based on this observation and comments received, DOE determined a 10-year warranty is representative for parts coverage. This review also found that labor is generally called out as not being covered by manufacturer warranties. However, DOE considered that other players in the distribution chain may provide such labor cost coverage within the first year of operation. DOE performed a sensitivity analysis of the LCC model where the consumer would cover labor costs for any instances of heat exchanger failure within the first year and determined that there is no impact to the results and has retained the assumption of parts and labor coverage within one year of installation. With respect to the comments suggesting warranties as an indicator of lifetime, DOE encountered similar warranty terms for condensing and non-condensing boilers and did not attempt to extrapolate lifetime differences from warranty terms. Further, as noted during the CPB NODA and availability of Preliminary Analysis TSD, DOE agreed with commenters that it is difficult to estimate lifetime of a technology that has only been broadly available on the market for about 15 years, and DOE concludes that the values captured in survey results may be more representative of early experience based on new technology or installation issues. DOE expects that, as condensing boiler technology matures and installers become better trained at installing and maintaining condensing boilers, lifetime of condensing commercial packaged boilers sold and installed in 2020 and beyond would be expected to be similar to their non-condensing counterparts.

Crown commented that condensing boilers would be more susceptible to poor water-quality related failures due to their smaller piping, and that warranties take that into account. (Crown, Public Meeting Transcript, No. 61 at pp. 166–167) ASAP and the Joint Advocates commented that DOE is overestimating the repair costs for condensing boilers and that DOE should assume the same heat exchanger failure rates for condensing and non-condensing boilers in the absence of data to the contrary. (ASAP, Public Meeting Transcript, No. 61 at p. 164, Joint Advocates, No. 74 at p. 1, 7)

DOE notes that it considered the potential failures and failure probabilities particular to condensing commercial package boilers in the estimates of repair and maintenance costs, in particular assigning the heat exchanger, a major component of the boiler system, a higher probability of failure than for a non-condensing commercial packaged boiler. DOE appreciates ASAP's and the Joint Advocates' comment positing that DOE should use the same heat exchanger failure rates for condensing and non-condensing boilers in the absence of data to the contrary. However, DOE concludes it is a reasonable assumption given the level of maturity of condensing CPB technology relative to non-condensing commercial packaged boilers and the level of exposure a condensing heat exchanger has to potentially damaging condensate. DOE's assumption provides for a more conservative approach to the calculation of benefits relative to the proposed method suggested by ASAP and the Joint Advocates.

DOE used the latest RS Means Facility Maintenance and Repair Cost Data to determine labor and materials costs associated with repairing each CPB equipment class analyzed. DOE

assumed that all commercial packaged boilers have a 1-year warranty for parts and labor and a 10-year warranty on the heat exchanger. For a detailed discussion of repair costs, see appendix 8E of the final rule TSD.

7. Lifetime

Equipment lifetime is defined as the age at which equipment is retired from service. DOE used national survey data, published studies, and projections based on manufacturer shipment data to calculate the distribution of CPB lifetimes. DOE based equipment lifetime on a retirement function, which was based on the use of a Weibull probability distribution, with a resulting mean lifetime of 24.8 years. DOE assumed that the lifetime of a commercial packaged boiler is the same across the different equipment classes and efficiency levels. For a detailed discussion of CPB lifetime, see appendix 8F of the final rule TSD. In its March 2016 NOPR, DOE considered the potential impact of condensate on heat exchangers in commercial packaged boilers that operate in condensing mode and established a higher likelihood and sooner time-to-failure for CPB heat exchangers that are exposed to such condensate.

DOE received various comments regarding CPB equipment lifetime. Bradford White commented that while 24.8 years is a fair estimate for copper and cast iron commercial packaged boilers, it was unsure if it is also a fair estimate for newer, high efficiency condensing models, noting that this equipment has not been around long enough to understand what is typical versus where local adverse conditions may have prematurely caused the boiler to fail. (Bradford White, No. 68 at p. 4) PEM commented that the average life of the New York City field constructed boiler is about 25 years with a maximum of 30 years. (PEM, Public Meeting Transcript, No. 61 at p. 123) ABMA expressed concern regarding the use of EPA–DEFRA reference in the analysis that states that with proper maintenance condensing and non-condensing boilers should have similar life expectancy, and inquired whether the difference in maintenance standards between the two countries was ever considered. (ABMA, No. 64 at p. 1) BHI commented that the life expectancy of condensing and non-condensing boilers is different and that DOE needs to look at warranty information for different commercial boilers to get some evidence in this regard. (BHI, No. 71 at p. 17) Similarly, Crown noted that manufacturer warranties are a good, impartial metric of boiler lifetimes, and that DOE will find there are pretty stark differences between those warranties for condensing and non-condensing boilers. (Crown, Public Meeting Transcript, No. 61 at p. 165) Also commenting on warranties, ABMA commented that a 10-year warranty on the heat exchanger for steam boilers would be foolhardy since the equipment is usually poorly maintained and the life of the boilers are highly dependent upon prevailing operating and maintenance conditions. (ABMA, No. 64 at p. 3)

After carefully considering these comments, DOE has concluded that there is not enough data available to accurately distinguish the lifetime of condensing boilers because, as Bradford White stated, they have not been around long enough to understand what is typical versus where local adverse conditions may cause premature boiler failure. In addition, condensing boiler technologies have been improving since their introduction to the U.S. market; therefore, the lifetime of the earliest condensing boilers, and thus the perception by those surveyed, may not be representative of current or future condensing boiler designs. However, DOE did retain its additional repair costs for condensing boilers by assuming different service lifetimes for heat exchangers for condensing boilers and non-condensing boilers, and this is intended to capture all factors that may lead to shorter heat exchanger life for condensing boilers. Regarding ABMA's comment about 10-year warranties on heat exchangers for steam boilers, DOE reviewed manufacturer warranties and determined that some steam boilers warranties cover the heat exchanger for 10 years.

Details on how DOE adjusted the repair costs for heat exchangers may be found in appendix 8E of the final rule TSD. For more details on how DOE derived the CPB lifetime, see appendix 8F of the final rule TSD.

8. Discount Rates

The discount rate is the rate at which future expenditures and savings are discounted to establish their present value. DOE estimated discount rates separately for commercial and residential end users.

For residential consumers, DOE applies weighted average discount rates calculated from consumer debt and asset data, rather than marginal or implicit discount rates.[55] DOE notes that the LCC does not analyze the appliance purchase decision, so the implicit discount rate is not relevant in this model. The LCC estimates net present value over the lifetime of the equipment, so the appropriate discount rate will reflect the general opportunity cost of household funds, taking this time scale into account. Given the long time horizon modeled in the LCC, the application of a marginal interest rate associated with an initial source of funds is inaccurate. Regardless of the method of purchase, consumers are expected to continue to rebalance their debt and asset holdings over the LCC analysis period, based on the restrictions consumers face in their debt payment requirements and the relative size of the interest rates available on debts and assets. DOE estimates the aggregate impact of this rebalancing using the historical distribution of debts and assets.

To establish residential discount rates for the LCC analysis, DOE identified all relevant household debt or asset classes in order to approximate a consumer's opportunity cost of funds related to appliance energy cost savings. It estimated the average percentage shares of the various types of debt and equity by household income group using data from the Federal Reserve Board's Survey of Consumer Finances[56] (SCF) for 1995, 1998, 2001, 2004, 2007, 2010, and 2013. Using the SCF and other sources, DOE developed a distribution of rates for each type of debt and asset by income group to represent the rates that may apply in the year in which amended standards would take effect. DOE assigned each sample household a specific discount rate drawn from one of the distributions. The average rate across all types of household debt and equity and income groups, weighted by the shares of each type, is 4.4 percent.

For commercial end users, DOE calculated commercial discount rates as the weighted average cost of capital (WACC), using the Capital Asset Pricing Model (CAPM). DOE derived the discount rates by estimating the cost of capital of individual companies that purchase commercial packaged boilers. Damodaran Online is a widely used source of information about company debt and equity financing for most types of firms and was the primary source of

[55] The implicit discount rate is inferred from a consumer purchase decision between two otherwise identical goods with different first cost and operating cost. It is the interest rate that equates the increment of first cost to the difference in net present value of lifetime operating cost, incorporating the influence of several factors: Transaction costs; risk premiums and response to uncertainty; time preferences; interest rates at which a consumer is able to borrow or lend.

[56] The Federal Reserve Board, *Survey of Consumer Finances,* (1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013). Available at *http://www.federalreserve.gov/pubs/oss/oss2/scfindex.html.*

data for the commercial discount rate analysis.[57] After DOE estimated WACC values for individual companies, the results were condensed into distributions by building type and the LCC model selects discount rates from the distributions corresponding to the building types being modeled.

See chapter 8 of the final rule TSD for further details on the development of consumer discount rates.

DOE received several comments regarding its use of discount rates in this rulemaking. Raypak and Spire commented that residential discount rates should not be used and that using commercial discount rates would be better for the residential sector, noting that the discount rate that should apply is that of the debt and equity of the owner of the buildings, not of the people that live in them. (Raypak, Public Meeting Transcript, No. 61 at pp. 176–177; Spire/Laclede, Public Meeting Transcript, No. 61 at p. 176; Spire, No. 73 at p. 27) AHRI agreed with comments from Raypak and Spire, and added that commercial packaged boilers used in residential settings are typically used in large apartment buildings or complexes where heating costs are included in the rent and associated fees. (AHRI, No. 76 at p. 41) However, AHRI commented that consumer discount rates used in the LCC analysis are incorrectly computed and used due to the use of average rather than marginal discount rates, while also noting that previous rulemaking comments that DOE should use marginal discount rates for consumers have little actual relevance in this rulemaking, since AHRI finds that the average and marginal discount rates may be approximately the same. (AHRI, No. 76 at p. 40) NEEA commented that energy bills have no influence on rent prices for multi-family housing, reflecting a similar concern in how costs are transferred in the multi-family housing market. (NEEA, Public Meeting Transcript, No. 61 at pp. 182–183)

With respect to the use of residential discount rates in its analysis, DOE considered the question whether a commercial discount rate should be used for residential, multi-family buildings. DOE understands that a commercial discount rate might apply in some cases, but in other cases, while the upfront purchase is funded by a building owner or entity, ultimately income from the renters pay for the CPB equipment through rent paid to the owner or entity and additionally ultimately pay for the operating and maintenance cost of the CPB equipment. Further, the discount rate is not used in conjunction with the purchase of the equipment, but is used to determine a present value for a future stream of ongoing operating and maintenance costs and benefits. DOE understands that the principal time a commercial discount rate would apply is when an owner or entity can exert market power and claim the financial benefits as excess profits. Such rental markets do exist, but not for the long run. Either new rental units get built until supply and demand are in balance, or some external shock upsets the owner's or entity's ability to reap excess profits. As such, for this final rule analysis, DOE is using updated residential discount rates for the CPB equipment used in the residential sector.

More details regarding DOE's estimates of consumer discount rates are provided in chapter 8 of the final rule TSD.

9. Market Efficiency Distribution in the No-New-Standards Case

To accurately estimate the share of consumers that would be affected by a potential energy conservation standard at a particular efficiency level, DOE analyzed the considered efficiency levels relative to a no-new-standards case (*i.e.,* the case without amended energy efficiency standards). This analysis requires an estimate of the distribution of equipment efficiencies in the no-new-standards case (*i.e.,* what consumers would have purchased in the compliance year in the absence of amended standards). DOE refers to this distribution of equipment energy efficiencies as the no-new-standards-case efficiency distribution.

Regarding DOE's use of the AHRI database to establish the no-new-standards case efficiency distribution in its NOPR analysis, AHRI commented that the analysis should consider the number of basic models and their distribution by efficiency level, which differs from the number of listings, for its economic analysis. (AHRI, No. 76 at pp. 12, 17–24) In written and oral comments, manufacturers stated that the distribution of CPB equipment models, based on efficiency, is not a fair assessment on how the market shipments are distributed. (Lochinvar, No. 70 at p. 6; BHI, No. 71 at p. 17; Raypak, No. 72 at p. 2) Manufacturers expressed that the scope of available equipment is covered by the AHRI database, however, the distribution of equipment is not representative of the volume of sales as actual shipments will be more biased toward high efficiency equipment than is indicated by available models.

DOE requested shipment information from stakeholders at the NOPR phase. In response, AHRI submitted shipment information for SGHW and LGHW equipment classes that was broken down by efficiency and rated input (for SGHW only). AHRI also submitted historical annual shipment information for gas-fired hot water (including condensing boilers), gas-fired steam, oil-fired hot water and oil-fired steam equipment classes. DOE used the AHRI database and equipment shipment data by efficiency provided by AHRI to analyze trends within equipment classes, as it relates to efficiency levels, to determine the anticipated no-new-standards case efficiency distribution in 2020, the assumed compliance year for amended standards. The trends show the market moving toward higher efficiency commercial packaged boilers, as noted by stakeholders, and DOE accounted for these trends in its no-new-standards case projection. DOE used this information for updating the final rule analysis. For equipment classes that lacked shipment information, DOE used publicly available modeling listing and efficiency information in its analysis. In the absence of shipment information, the distribution of model listings provides a reasonable proxy for shipments for each equipment class. In general, manufacturers are likely to offer models with rated inputs and efficiencies where demand is highest, therefore DOE assumed modeling listing and efficiency information would hold as a proxy for efficiency distribution of shipments.

Regarding AHRI's comment that DOE use basic models only in its analysis, as opposed to the entire database, DOE does not filter the AHRI directory to capture only basic models and notes that the AHRI database does not facilitate the differentiation between basic models within their model listings. DOE is concerned with attempting to infer which models in the database represent basic models, using only the data available in the AHRI database. However, DOE did perform an analysis of the distribution of efficiency levels, and it showed only a minimal difference between DOE's distributions, as captured in 2016 (*i.e.,* an updated dataset obtained since that used during the March 2016 NOPR), and those provided by AHRI. Further, DOE understands that some models may have more equipment units listed than the others, correlating to a demand in the market for variations from basic models, which may reflect consumer demand for such equipment. Since DOE uses

[57] Damodaran Online. *Data* page: *Cost of Capital by Industry Sector.* (2004–2013). Available at: *http://pages.stern.nyu.edu/~adamodar/.*

historical versions of the AHRI database to develop projected distributions for 2020, it would be impractical to attempt to reassess these distributions in terms of basic models, with little to no improvement in the accuracy of the actual distribution. Lastly, DOE notes that stakeholders have expressed concerns historically regarding the ability to infer a distribution of shipments by efficiency based on a distribution of available models and/or listing. As noted in this section, DOE received and considered historical shipment data by efficiency for the gas-fired hot water CPB equipment classes in its determination of the no-new-standards efficiency distributions. However it did retain its methodology from the NOPR, of using the AHRI database on the other six equipment classes analyzed, as it did not have data on shipments by efficiency to inform its analysis. For the purpose of this final rule, DOE did a general data update to capture AHRI 2016 equipment models data and adjusted the gas-fired hot water CPB equipment condensing market share approach and its projection of the no-new-standards case efficiency distributions for the year 2020 based on the availability of historical shipments data. For all other equipment classes analyzed, and for portions of the SGHW and LGHW CPB equipment classes (not including the year 2020 and its condensing market share approach for which shipment data was used), DOE retained its NOPR methodology for developing the no-new-standards case efficiency distribution, and considered all the equipment listed in the AHRI database.

Also providing comment, Spire stated that there is no basis to assume that purchases of higher-efficiency commercial packaged boilers that would provide net economic benefits to the purchaser would not occur even in the absence of the proposed standard. (Spire, No. 73 at p. 15) DOE makes no such assertion, but notes that its analysis assesses the impact of standards on consumers, but does not further assess the net economic impacts on consumers who voluntarily select higher efficiency equipment in the absence of standards.

Table IV.6 presents the estimated no-new-standards case efficiency market shares for each analyzed CPB equipment class in 2020. Appendix 8H of the final rule TSD contains more information regarding DOE's development of the efficiency distributions in the no-new-standards case.

TABLE IV.6—ESTIMATED NO-NEW-STANDARDS CASE BOILER EFFICIENCY DISTRIBUTION * OF ANALYZED COMMERCIAL PACKAGED BOILER EQUIPMENT CLASSES ** IN 2020

Efficiency	SGHW (%)	LGHW (%)	SOHW (%)	LOHW (%)	SGST (%)	LGST (%)	SOST (%)	LOST (%)
77					46	13		
78					6	31		
79					15	13		
80	9				16	21		
81	4				12	5	27	35
82	5	1	32			11		
83		1	24		5		53	38
84	4	4	12	40		7	14	
85	8	15	17					26
86				45			6	
87			10					1
88			3	10				
89				1				
90								
91								
92								
93	36							
94		77						
95	28							
96								
97		2	3	3				
98								
99	5							

* Results may not add up to 100% due to rounding.
** SGHW = Small Gas-fired Hot Water; LGHW = Large Gas-fired Hot Water; SOHW = Small Oil-fired Hot Water; LOHW = Large Oil-fired Hot Water; SGST = Small Gas-fired Steam; LGST = Large Gas-fired Steam; SOST = Small Oil-fired Steam; LOST = Large Oil-fired Steam.

DOE calculated the LCC and PBP for all consumers as if each were to purchase new equipment in the year that compliance with amended standards is required. EPCA directs DOE to publish a final rule amending the standard for the equipment not later than 2 years after a notice of proposed rulemaking is issued. (42 U.S.C. 6313(a)(6)(C)(iii)) As discussed previously in section III.A of this document, for purposes of its analysis, DOE used 2020 as the first year of compliance with amended standards.

10. Payback Period Inputs

The payback period is the amount of time it takes the consumer to recover the additional installed cost of more-efficient equipment, compared to baseline equipment, through energy cost savings. Payback periods are expressed in years. Payback periods that exceed the life of the equipment mean that the increased total installed cost is not recovered in reduced operating expenses.

The inputs to the PBP calculation are the total installed cost of the equipment to the consumer for each efficiency level and the average annual operating expenditures for each efficiency level. The PBP calculation uses the same inputs as the LCC analysis, except that discount rates are not needed.

Lochinvar commented that DOE should not consider a payback period over 7 years as acceptable in this

rulemaking, noting that commercial buildings are sold just like consumer property and owners will not accept a payback period longer than their expected length of ownership. (Lochinvar, No. 70 at p. 6)

DOE notes that, in general, rulemakings have selected levels with payback periods within the lifetime of the equipment. However, DOE's LCC analysis and development of full life-cycle-cost and life-cycle-cost savings values considers additional detail and economic factors and DOE considers it a more robust assessment of the economic impact on consumers.

11. General Comments

DOE received several comments regarding complexity of the LCC Model. AHRI, through its consultant Shorey Consulting, Inc., commented that the use of distributions, and not single point values, makes the model more complex and less transparent and suggested that DOE should have a dialogue with key stakeholders to determine whether the apparent sophistication that comes from the Monte Carlo process is worth the loss in transparency. In addition, they suggest that DOE should also engage stakeholders to determine whether the assumptions inside the LCC model are either necessary or correct. (AHRI, No. 76 at pp. 28–29) In particular, AHRI expressed concern that the random no-new-standards case assignment of efficiencies is thoroughly embedded in DOE's model logic and is not reflective of a functioning marketplace. (AHRI, No. 76 at p. 31 and 45) Spire similarly commented that DOE overstated benefits by assuming purchasing decisions that do not make economic sense will occur. (Spire, No. 73 at p. 16) AHRI suggested a need for a more straightforward, less complex and more understandable approach to modeling. They assert that a core issue is the use of the Monte Carlo simulation approach, and while recognizing that many inputs are distributions rather than single point values, assert that gaining the ability to use distributions has come at the cost of clarity and traceability and the ability to audit the model. (AHRI, No. 76 at p 28) AHRI, through its consultant, provides an example as an illustrative modeling approach that is deterministic, as opposed to using Monte Carlo analysis, utilizes a narrower set of assumptions, and whose implementation resulted in substantively different economic results. Specific aspects of these results are presented in AHRI's comment. AHRI emphasizes that this model is an alternative working model, but states it is in no way suggested as a direct substitute for DOE's LCC, but rather represents a pathway towards a more effective model. (AHRI, No. 76 at pp. 2–3). Spire also commented that DOE's spreadsheets and Monte Carlo software were unreasonably complicated and prone to errors and lacks transparency. (Spire, No. 73 at p. 26).

In response to the comments on the LCC model complexity, DOE welcomes feedback and data supporting modeling changes in its analysis, but, in general believes that it is valuable to capture variation in inputs to help establish variation in LCC and LCC savings in the output. DOE has found that the examination of the fraction of a user base which is negatively impacted by possible standards is an important consideration in setting new standards. DOE notes that the LCC model using the Crystal Ball software can output the assumed values and results of each assumption and provide forecasted results for each iteration in the Monte Carlo simulation if desired by stakeholders to review or trace the output. In addition, it is possible to modify directly the assumption cells in the model to examine impacts of changes to assumptions on the LCC and in fact DOE relies both of these techniques for model testing. DOE notes that the model provided as an example by AHRI limited in many important ways the scope of the market being examined, including omission of any use of RECS data, ignoring new construction, assumes all condensing boilers operate in the high return water temperature scenario, ordering the efficiency distribution in the no-new-standards case as a function of calculated payback, and excluding the incremental costs of venting or maintenance and repair. In addition, a fundamental difference was in the base case assumption where the AHRI model presumed that where the analysis showed the shortest paybacks, consumers were presumed to purchase the highest efficiency boilers in the no-new-standards case distribution. (AHRI, No. 76 at p. 31) This reflects an overly optimistic and unrealistic working market, presumes information that may not be available to all purchasers and, while informative, may unreasonably bias the results as presented by AHRI. While DOE appreciates the feedback from AHRI and recognizes the value of clarity and traceability, it has not deviated from the use of the Monte Carlo approach for the final rule. DOE addresses specific modeling assumptions in the discussion surrounding those variables in the LCC inputs discussion that follows.

AHRI posited that either due to DOE's sizing assumption and/or due to the use of the CBECS energy use data in the sample itself, the energy use model produced excessively high operating hours in some instances and that these distort the economic results. (AHRI, No. 76 at pp. 37–40) AHRI's consultant suggest that a more logical approach for estimating may be to use directly measured data or estimated load data (AHRI, No. 76 at p. 40). DOE has not identified a source of comprehensive burner operating hour (BOH) data for commercial boilers that could be used for such an analysis nor was such identified to DOE by stakeholders. Estimated BOH data from other sources, such as whole building simulation modeling of commercial buildings is another approach that has been considered by DOE, but could result in the need to resolve an even larger number of building-level modeling details and assumptions. DOE received no early guidance from stakeholders and accordingly did not propose the use of whole building simulation at the November 2014 NODA and preliminary analysis or March 2016 NOPR stages. Consequently, DOE has updated the model to use the most recent CBECS 2012 data and made other adjustments, but has not abandoned the use of CBECS energy data nor its sizing methodology. DOE also notes that certain results that are presented by AHRI for the SGHW class reflect the removal of the upper 10 percent of the calculated BOH. DOE concludes that while there is value in reviewing the BOH results, there is no basis to assume that the very highest level of BOH seen in the buildings examined should be simply removed from the LCC analysis.

AHRI also commented that combining the results for natural and mechanical draft commercial packaged boilers, particularly for SGHW boilers, disguises the effects of market adoption of higher efficiency equipment and demonstrates this with the results obtained with their modeling approach and assumptions. (AHRI, No. 76 at pp. 32–33) DOE, however, notes that it considers that there is variation in equipment design, including draft type, in the market. However, as has been noted by DOE in this rulemaking, draft type does not define a unique utility for commercial packaged boilers and consequently there is only one equipment class for the SGHW CPB equipment class. Thus, DOE's LCC analysis aggregates sample selection both for consumers using natural draft equipment and mechanical draft equipment.

AHRI and BHI commented that the random assignment of no-new-standards case efficiencies in the LCC model is not correct, as this inherently assumes that

the purchasers do not pay attention to costs and benefits in a world without standards. AHRI further stated that approximately 75 percent of commercial buildings which use boilers are buildings where the end user either pays, or has significant control, over the decision to purchase a new boiler. (AHRI, No. 76 at p. 26, 29, 30; BHI, No. 71 at p. 16)

In response, DOE notes that development of a complete consumer choice model, to support an alternative to random assignment in the no-new-standards case, for boiler efficiency would require data that are not currently available, as well as recognition of the various factors that impact the purchasing decision, such as incentives, the value that some consumers place on efficiency apart from economics (*i.e.,* ''green behavior''), and whether the purchaser is a building owner/occupier or landlord. For the final rule, DOE used the same general method to assign boiler efficiency in the no-new-standards case.

G. Shipments Analysis

In its shipments analysis, DOE developed shipment projections for commercial packaged boilers and, in turn, calculated equipment stock over the course of the analysis period. DOE used the shipments projection and the equipment stock to calculate the national impacts of potential amended or new energy conservation standards on energy use, NPV, and future manufacturer cash flows. DOE developed shipment projections based on estimated historical shipment and an analysis of key market drivers for each kind of equipment. DOE did not find any evidence nor was provided any data during the public comment period that indicates fuel switching from oil or gas-fired commercial packaged boilers to electric commercial packaged boilers occurred in the market for these products. Therefore DOE did not modify the shipments analysis to include fuel switching beyond what the historical shipments trend might imply. Furthermore, CBECS 2012 data indicate that 7 percent of commercial buildings use electric boilers (not necessarily packaged boilers) for primary space heating.

In the final rule DOE revised its estimates of historical shipments and shipment projections as additional data became available. The additional data include public use microdata files on the ''Consumption and Expenditure'' segment of EIA's CBECS 2012. AHRI also provided confidential historical shipment data to DOE's contractors under confidentiality arrangement. DOE estimated historical shipments from stock estimates based on the CBECS data series from 1979 to 2012. Since no CBECS survey was conducted prior to 1979, DOE used the trends in historical shipment data for residential boilers to estimate the historical shipments for the 1960–1978 time period. For estimation of stocks of gas and oil boilers, DOE used the data on growth of commercial building floor space for nine building types from *AEO* reports, percent floor space heated by CPB data from CBECS for these building types, and estimated saturations of commercial packaged boilers in these building types. From these stock estimates, DOE derived the shipments of gas-fired and oil-fired commercial packaged boilers using correlations between stock and shipment for gas and oil boilers. As noted in section IV.E.2 of this document, to obtain individual equipment class shipments from the aggregate values, DOE used the steam to hot water shift trends from the EPA database for space heating boilers. The oil to gas shift trends were derived from CBECS data for historical shipments and from *AEO2016* for projected shipments. The equipment class shipments were further disaggregated between shipment to new construction and replacement/switch shipments.

To project equipment class shipments for new construction, DOE relied on building stock and floor space data obtained from the *AEO2016.* DOE assumed that CPB equipment is used in both commercial and residential multi-family dwellings. DOE estimated a total saturation rate for each equipment class based on prior CBECS data and a modeled size distribution of commercial packaged boilers in commercial buildings with a given design heating load. As new data from CBECS 2012 became available, DOE modified its approach to calculate the saturation rates for new construction used in the March 2016 NOPR stage. For estimation of saturation rates in the new commercial construction, DOE calculated saturation rates averaged over a period of 9 years from 2004 through 2012 from the estimated CPB stock for buildings constructed during the reference period. The new construction saturation rates were projected from 2013 till the end of the analysis period considering currently observed trends from CBECS 2012 and *AEO2016* (for oil to gas shifts). For residential multi-family units, DOE used RECS 2009 data and considered multi-family buildings constructed in the 9 year period from 2001 to 2009 as new construction for calculating the new construction saturation. DOE assumed that the new construction saturation in multi-family buildings are nearing their minimum threshold values and would remain unchanged during the analysis period. DOE applied these new construction saturation rates to new building additions in each year over the analysis period (2020–2049), yielding shipments to new buildings. The building stock and additions projections from the *AEO2016* are shown in Table IV.7.

DOE estimated the percent share of different efficiency bins across the equipment classes as detailed in chapter 9 of the final rule TSD.

TABLE IV.7—BUILDING STOCK PROJECTIONS

Year	Total commercial building floor space (million sq. ft.)	Commercial building floor space additions (million sq. ft.)	Total residential building stock (millions of units)	Residential building additions (millions of units)
2015	82,176	1,659	115.39	1.18
2020	86,661	2,079	120.41	1.74
2025	91,888	2,149	126.03	1.71
2030	97,148	2,210	131.39	1.67
2035	102,364	2,266	136.35	1.64
2040	107,552	2,337	141.35	1.65
2045	113,164	2,403	146.66	1.74
2049	117,864	2,458	151.06	1.79

Source: EIA *AEO2016.*

Commercial consumer purchase decisions are influenced by the purchase price and operating cost of the equipment, and therefore may be different across standards levels. To estimate the impact of the increase in relative price from a particular standard level on CPB shipments, DOE assumed that a portion of affected consumers are more price-sensitive and would repair equipment purchased prior to enactment of the standard rather than replace it, extending the life of the equipment by 6 years. DOE modeled this impact using a relative price elasticity approach. When the extended repaired units fail after 6 more years, DOE assumed they will be replaced with new ones. A detailed description of the extended repair calculations is provided in chapter 9 of the final rule TSD.

In the March 2016 NOPR, DOE sought feedback on the assumptions used to develop historical and projected shipments of commercial packaged boilers and the representativeness of its estimates of projected shipments. DOE also requested information on historical shipments of commercial packaged boilers including shipments by equipment class for small, large, and very large commercial packaged boilers. In the March 2016 NOPR analysis, as a required input to the NIA model, DOE had estimated historical shipments of commercial packaged boilers for over 50 years through 2012. AHRI commented that DOE's estimates of historical shipments are lower than the actual historical shipments and furnished confidential historical shipment data for a limited period to DOE's contractors in support of its assertion. (AHRI, No. 76 at p. 13) DOE appreciates the efforts of AHRI and its members to help better inform this rulemaking. The data provided were used to calibrate and refine DOE's shipments model for estimation of historical shipments.

Several commenters further pointed out that the projected shipments of commercial packaged boilers show an unrealistic growth trend that could not be observed in DOE's historical shipment estimates from 1960 through 2012. (AHRI, Public Meeting Transcript, No. 61 at p. 191; Raypak, Public Meeting Transcript, No. 61 at p. 193; Raypak, No. 72 at p. 2; Lochinvar, No. 70 at p. 4; Crown, Public Meeting Transcript, No. 61 at pp. 191–192) NEEA, however, pointed out that the growth in DOE's projected shipments could be attributed to replacements of existing boiler stock and growth in commercial building stock, which should track the trends of new construction of commercial floor space captured in the economic models of the EIA. (NEEA, Public Meeting Transcript, No. 61 at pp. 192–194)

In response to the comments received on projected shipments, DOE updated its shipments model, the results of which display lower growth of projected shipments. In particular, for the March 2016 NOPR, DOE used constant values for percent floor space heated by boiler and CPB saturation (*i.e.,* number of units per million square feet of floor space heated) during the entire analysis period for estimating the projected shipments. In the final rule, DOE used a declining trend in area heated by boiler (0.25 percent per year) but constant saturation resulting in only a more modest growth in shipments.

Lochinvar commented that DOE should consider publishing all the data and model parameters of the shipment model. (Lochinvar, No. 70 at p. 4)

In light of shipment data having been received under confidentiality agreement, DOE is unable to publish the shipment data furnished by AHRI. However, DOE has provided an updated version of the shipments model description and the model parameters in chapter 9 and appendix 9A of the TSD, and shipments data from DOE's calibrated model may be found in the NIA model.

DOE also received various general comments regarding its March 2016 NOPR shipments approach and shipments by efficiency level. BHI commented that DOE should rely on models sold, and not model availability, in its analyses. (BHI, No. 71 at p. 17) Similarly, Lochinvar commented that equipment databases are not representative of the distribution of sales. (Lochinvar, Public Meeting Transcript, No. 61 at p. 208) Bradford White noted that distribution of models based on efficiency is not a fair assessment of how CPB shipments are distributed, and further questions whether standards are truly necessary if, as DOE's own shipments projections show for condensing boilers, the market is already moving towards these higher efficiency equipment on its own. (Bradford White, No. 68 at p. 2) Weil-McLain commented that DOE should look at actual shipments to get a realistic idea of the distribution of boilers installed today based on efficiency levels, rather than total number of models available in each category. (Weil-McLain, No. 67 at p. 8) Raypak commented that it takes exception with the DOE's use of the number of models listed in the AHRI directory as representing the actual shipments of commercial packaged boilers as no such correlation existed and recommended that DOE use data that is more reflective of the marketplace. (Raypak, No. 72 at p. 2) Lochinvar commented that DOE has consistently projected shipments that exceed industry expectations and seem unjustified by existing market data, and that DOE underestimated market trends toward condensing boilers. (Lochinvar, No. 70 at pp. 4, 8) Weil-McLain expressed their belief that the impact of the proposed efficiency standards on natural draft and steam boiler shipments could be significant and that consumers will often decide to repair the existing boiler and delay replacement, creating an unintended consequent reduction in energy savings. (Weil-McLain, No. 67 at pp. 4, 8)

DOE notes that while models throughout most of this rulemaking had relied to some degree on indirect methods to estimate historical and projected shipments, in this final rule the shipments model has been calibrated utilizing shipments data provided to inform the analysis. Based on the availability of these shipments data and the calibration of the shipments model to better reflect the marketplace, DOE concludes that it has adequately addressed the stakeholders' concerns in this final rule. Regarding Bradford White's comments whether standards are truly necessary, DOE notes that the shipments data it received allowed DOE to better inform its analysis and to make that determination based on a more accurate assessment of the national energy savings potential, among other factors it considered. With regard to Weil-McLain's comment about repair versus replace under new standards, DOE assumed that a portion of affected consumers are more price-sensitive and would repair equipment purchased prior to enactment of the standard (in 2019) rather than replace it, extending the life of the equipment by 6 years. DOE modeled this impact using a relative price elasticity approach. When the extended repaired units fail after 6 more years, DOE assumed they will be replaced with new ones. Regarding Weil-McLain's specific comment about natural draft boilers, DOE notes that the standards for small gas-fired hot water commercial packaged boilers in the final rule are lower than proposed at March 2016 NOPR and should alleviate the impact on natural draft shipments. Regarding steam boilers, while DOE understands the observation voiced by Weil-McLain, no new data was provided as to the driving force or likely significance of the impact on the overall steam boiler shipments. Consequently, DOE was not able to further calibrate the shipments

model for the impact of standard levels analyzed for steam boilers.

The projected shipments at 5 year intervals during the analysis period starting from 2020 and a few key years are shown in Table IV.8.

TABLE IV.8—SHIPMENTS OF COMMERCIAL PACKAGED BOILER EQUIPMENT

[Thousands]

Year	SGHW CPB *	LGHW CPB	SOHW CPB	LOHW CPB	SGST CPB	LGST CPB	SOST CPB	LOST CPB
2015	25,634	2,112	4,156	298	2,313	260	1,240	93
2020	24,582	2,025	2,238	161	1,927	216	1,189	89
2025	23,979	1,976	2,159	155	1,551	174	1,140	85
2030	26,734	2,203	2,061	148	1,143	128	1,093	82
2035	28,524	2,350	1,945	140	685	77	1,045	78
2040	27,918	2,300	1,827	131	432	49	981	73
2045	28,874	2,379	1,718	123	415	47	922	69
2049	29,980	2,470	1,627	117	401	45	874	65

* SGHW = Small Gas-fired Hot Water; LGHW = Large Gas-fired Hot Water; SOHW = Small Oil-fired Hot Water; LOHW = Large Oil-fired Hot Water; SGST = Small Gas-fired Steam; LGST = Large Gas-fired Steam; SOST = Small Oil-fired Steam; LOST = Large Oil-fired Steam.

Given the comments regarding the impact of increased repairs on shipments, DOE determined that use of price elasticity to model the extended repair option should be maintained in this final rule. DOE used the price elasticity from a residential product study to use sales and price data for commercial unitary air conditioners [58] to more closely approximate an elasticity for commercial equipment (data specific to commercial packaged boilers were not available). DOE notes that it performed two sensitivity analyses—one without the use of the price elasticity, and one in which the price elasticity was increased ten-fold. The results of the sensitivity analyses are presented in appendix 10D of the final rule TSD.

Because the estimated energy usage of CPB equipment differs by commercial and residential setting, the NIA employed the same fractions of shipments (or sales) to consumers as is used in the LCC analysis. The fraction of shipments by type of commercial consumer is shown in Table IV.9.

TABLE IV.9—SHIPMENT SHARES BY TYPE OF COMMERCIAL CONSUMER

Equipment class	Commercial (%)	Residential (%)
Small Gas-Fired Hot Water Commercial Packaged Boiler	89	11
Large Gas-Fired Hot Water Commercial Packaged Boiler	99	1
Small Oil-Fired Hot Water Commercial Packaged Boiler	74	26
Large Oil-Fired Hot Water Commercial Packaged Boiler	96	4
Small Gas-Fired Steam Commercial Packaged Boiler	90	10
Large Gas-Fired Steam Commercial Packaged Boiler	99	1
Small Oil-Fired Steam Commercial Packaged Boiler	90	10
Large Oil-Fired Steam Commercial Packaged Boiler	99	1

H. National Impact Analysis

The NIA assesses the national energy savings (NES) and the national net present value (NPV) from a national perspective of total consumer costs and savings that would be expected to result from new or amended standards at specific efficiency levels.[59] The NES and NPV were analyzed at specific efficiency levels (*i.e.,* TSLs) for each equipment class of CPB equipment. DOE calculated the NES and NPV based on projections of annual equipment shipments, along with the annual energy consumption and total installed cost data from the LCC analysis. In this rulemaking, DOE projected the energy savings, operating cost savings, equipment costs, and NPV of commercial consumer benefits for equipment sold from 2020 through 2049—the year in which the last standards-compliant equipment would be shipped during the 30-year analysis period.

To make the analysis more accessible and transparent to all interested parties, DOE uses a computer spreadsheet model to calculate the energy savings and the national consumer costs and savings from each TSL.[60] Chapter 10 and appendix 10A of the final rule TSD explain the model and provide instructions. Interested parties can review DOE's analyses by interacting with this spreadsheet. The model and documentation are available on DOE's website.[61] The NIA calculations are based on the annual energy consumption and total installed cost data from the energy use analysis and the LCC analysis.

DOE evaluates the impacts of new or amended standards for commercial packaged boilers by comparing no-new-standards-case projections with standards-case projections. The no-new-standards-case projections characterize energy use and consumer costs for each equipment class in the absence of new

[58] U.S. Department of Energy. *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Distribution Transformers, Chapter 9 Shipments Analysis.* April 2013.

[59] The NIA accounts for impacts in the 50 states and U.S. territories.

[60] DOE understands that Microsoft Excel is the most widely used spreadsheet calculation tool in the United States and there is general familiarity with its basic features. Thus, DOE's use of Excel as the basis for the spreadsheet models provides interested parties with access to the models within a familiar context.

[61] DOE's webpage on commercial packaged boiler equipment is available at *https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=8.*

and amended energy conservation standards. DOE compared these projections with those characterizing the market for each equipment class if DOE were to adopt amended standards at specific energy efficiency levels (*i.e.,* the standards cases) for that class. For the standards cases, DOE used a ''roll-up'' scenario in which equipment at efficiency levels that do not meet the standard level under consideration would ''roll up'' to the efficiency level that just meets the amended standard level, and equipment already being purchased at efficiency levels at or above the amended standard level would remain unaffected.

Unlike the LCC analysis, the NIA analysis does not use distributions for inputs or outputs, but relies on national average equipment costs and energy costs. DOE used the NES spreadsheet to perform calculations of energy savings and NPV using the annual energy consumption, maintenance and repair costs, and total installed cost data from the LCC analysis. The NIA also uses projections of energy prices and building stock and additions consistent with various *AEO2016* Economic Growth cases. NIA results based on these cases are presented in chapter 10 and appendix 10D of the final rule TSD.

Table IV.10 summarizes the inputs and methods DOE used for the NIA for the final rule. Discussion of these inputs and methods follows the table. See chapter 10 of the final rule TSD for further details.

TABLE IV.10—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS

Inputs	Method
Shipments	Annual shipments from shipments model.
First Year of Analysis Period	2020.
No-New-Standards Case Forecasted Efficiencies.	Efficiency distributions are forecasted based on historical efficiency data.
Standards Case Forecasted Efficiencies	Used a ''roll-up'' scenario.
Annual Energy Consumption per Unit	Annual weighted-average values are a function of energy use at each TSL.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each TSL. Incorporates forecast of future equipment prices based on historical data.
Annual Energy Cost per Unit	Annual weighted-average values as a function of the annual energy consumption per unit, and energy prices.
Energy Prices	*AEO2016* no-CPP case prices projections (to 2040) and extrapolation through 2100.
Energy Site-to-Source Conversion Factors	A time-series conversion factor based on *AEO2016*.
Discount Rate	3- and 7-percent real.
Present Year	Future expenses discounted to 2016, when the final rule will be published.

1. Equipment Efficiency in the No-New-Standards Case and Standards Cases

As described in section IV.F.9 of this document, DOE used a no-new-standards-case distribution of efficiency levels to project what the CPB equipment market would look like in the absence of amended standards. DOE applied the percentages of models within each efficiency range to the total unit shipments for a given equipment class to estimate the distribution of shipments for the no-new-standards case. Then, from those market shares and projections of shipments by equipment class, DOE extrapolated future equipment efficiency trends both for a no-new-standards-case scenario and for standards-case scenarios.

For the standards cases, DOE used a ''roll-up'' scenario to establish the shipment-weighted efficiency for the year that standards are assumed to require compliance (2020). In this scenario, the market of equipment in the no-new-standards case that do not meet the standard under consideration would ''roll up'' to meet the new standard level, and the market share of equipment above the standard would remain unchanged.

Lochinvar commented that Tables 10.3.1 and 10.3.2 in the March 2016 NOPR TSD contain clerical errors and provided corrections in written comments. (Lochinvar, No. 70 at p. 4) Furthermore, Lochinvar commented that the roll-up analysis does not show any reduction in the sales of commercial packaged boilers as the minimum efficiency levels are increased, and that reduced sales would be expected since as the price of baseline boilers increase, some projects will no longer be affordable and that would impact the number of boilers shipped. (Lochinvar, No. 70 at pp. 5–6) BHI expressed concern that DOE's roll-up assumption that shipments of equipment at efficiencies above the proposed standard would be unaffected is inconsistent with how SGHW boilers are used. Further, BHI noted that if DOE were to adopt the 85-percent level for SGHW commercial packaged boilers, there is reason to believe that most of the ''substandard'' SGHW sales would move to the condensing level due to the inability to use Category I venting and the added cost of venting materials, citing the disappearance of sales of SGHW models at efficiencies between 85 percent and 90 percent. (BHI, No. 71 at p. 14)

After reviewing the tables identified by Lochinvar, DOE determined that those tables were a close match to the tables from the preliminary analysis TSD, and not the March 2016 NOPR TSD. The March 2016 NOPR TSD does not contain Table 10.3.1 or Table 10.3.2, nor does it have no-new-standards case and standards case efficiency distribution tables for equipment classes separated by draft type as noted in comments from Lochinvar. However, DOE carefully examined the tables that were the closest match in the March 2016 NOPR TSD, and it was unable to identify any discrepancies. With respect to Lochinvar's comments regarding the roll-up scenario and accounting for reductions in boiler sales, DOE notes that the roll-up tables represent percentages of the market for each efficiency level, with the entire market for a given equipment class defined as 100 percent. DOE does account for reductions in boiler sales that may result from amended standards by considering a price elasticity factor, hence already accounting for shipment impacts due to increased equipment prices. Regarding BHI's comments on roll-up, DOE appreciates the insight into BHI's experience regarding historical sales of SGHW commercial packaged boilers in the 85 percent to 90 percent E_T. While DOE's roll-up approach does assume that sale shares of lower efficiency equipment would roll-up to the 85 percent E_T level, as proposed at the March 2016 NOPR, the SGHW level adopted in this final rule is 84 percent E_T.

The estimated efficiency trends in the no-new-standards case and standards

cases are described in chapter 10 of the final rule TSD.

2. National Energy Savings

The national energy savings analysis involves a comparison of national energy consumption of the considered equipment between each potential standards case also known as Trial Standard Level (TSL) and the case with no new or amended energy conservation standards. DOE calculated the national energy consumption by multiplying the number of units (stock) of each equipment (by vintage or age) by the unit energy consumption (also by vintage). DOE calculated annual NES based on the difference in national energy consumption for the no-new-standards case and for each higher efficiency standard case. DOE estimated energy consumption and savings based on site energy and converted the electricity consumption and savings to primary energy (*i.e.,* the energy consumed by power plants to generate site electricity) using annual conversion factors derived from *AEO2016.* Cumulative energy savings are the sum of the NES for each year over the timeframe of the analysis.

In 2011, in response to the recommendations of a committee on ''Point-of-Use and Full-Fuel-Cycle Measurement Approaches to Energy Efficiency Standards'' appointed by the National Academy of Sciences, DOE announced its intention to use full-fuel-cycle (FFC) measures of energy use and greenhouse gas and other emissions in the national impact analyses and emissions analyses included in future energy conservation standards rulemakings. 76 FR 51281 (Aug. 18, 2011). After evaluating the approaches discussed in the August 18, 2011 notice, DOE published a statement of amended policy in which DOE explained its determination that EIA's National Energy Modeling System (NEMS) is the most appropriate tool for its FFC analysis and its intention to use NEMS for that purpose. 77 FR 49701 (Aug. 17, 2012). NEMS is a public domain, multi-sector, partial equilibrium model of the U.S. energy sector [62] that EIA uses to prepare its *Annual Energy Outlook.* The FFC factors incorporate losses in production and delivery in the case of natural gas (including fugitive emissions) and additional energy used to produce and deliver the various fuels used by power plants. The approach used for deriving FFC measures of energy use and emissions is described in appendix 10B of the final rule TSD.

3. Net Present Value of Consumer Benefit

The inputs for determining the NPV of the total costs and benefits experienced by consumers of the considered equipment are (1) total annual installed cost, (2) total annual savings in operating costs (energy costs and repair and maintenance costs), and (3) a discount factor. DOE calculates the lifetime net savings for equipment shipped each year as the difference between the no-new-standards case and each standards case in terms of total operating cost savings and increases in total installed costs. DOE calculates lifetime operating cost savings over the life of each commercial packaged boiler shipped during the projection period.

a. Total Annual Cost

DOE determined the difference between the equipment costs under the standard-level case and the no-new-standards case in order to obtain the net equipment cost increase resulting from the higher standard level. As noted in section IV.F.1 of this document, DOE used a constant real price assumption as the default price projection; the cost to manufacture a given unit of higher efficiency neither increases nor decreases over time.

b. Total Annual Operating Cost Savings

The operating cost savings are energy cost savings, which are calculated using the estimated energy savings in each year and the projected price of the appropriate form of energy. To estimate energy prices in future years, DOE multiplied the average regional energy prices by the projection of annual national-average commercial energy price changes consistent with the projections found on page E–8 in *AEO 2016.*[63] *AEO2016* has an end year of 2040. To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2020 through 2040. As part of the NIA, DOE also analyzed scenarios that used inputs from variants of the *AEO2016* case that have lower and higher economic growth. Those cases have lower and higher energy price trends and the NIA results based on these cases are presented in appendix 10B of the final rule TSD.

c. Discount Rate

In calculating the NPV, DOE multiplies the net savings in future years by a discount factor to determine their present value. For this final rule, DOE estimated the NPV of consumer benefits using both a 3-percent and a 7-percent real discount rate. DOE uses these discount rates in accordance with guidance provided by the Office of Management and Budget (OMB) to Federal agencies on the development of regulatory analysis.[64] The discount rates for the determination of NPV are in contrast to the discount rates used in the LCC analysis, which are designed to reflect a consumer's perspective. The 7-percent real value is an estimate of the average before-tax rate of return to private capital in the U.S. economy. The 3-percent real value represents the ''social rate of time preference,'' which is the rate at which society discounts future consumption flows to their present value.

I. Consumer Subgroup Analysis

In analyzing the potential impacts of new or amended standards on consumers, DOE evaluates impacts on identifiable groups (*i.e.,* subgroups) that may be disproportionately affected by a new or amended national standard. For this final rule, DOE analyzed the impacts of the considered standard levels on ''low-income households for residential'' and ''small businesses for commercial sectors''.

With regard to its subgroup analysis, DOE received comments regarding the appropriateness of the use of residential discount rates to analyze the impact of the amended standard on the ''low income households for residential'' subgroup. Raypak commented that the LCC results in the subgroup analysis and the National level results are being significantly overstated due to the use of residential discount rates for the residential installations, since the equipment under consideration is installed in a commercial setting. (Raypak, Public Meeting Transcript, No. 61 at p. 188) Spire commented that some subgroups would be

[62] For more information on NEMS, refer to *The National Energy Modeling System: An Overview 2009,* DOE/EIA-0581(October 2009). Available at *http://www.eia.gov/forecasts/aeo/index.cfm.*

[63] The standards finalized in this rulemaking will take effect a few years prior to the 2022 commencement of the Clean Power Plan compliance requirements. As DOE has not modeled the effect of CPP during the 30 year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. These energy efficiency standards are expected to put downward pressure on energy prices relative to the projections in the *AEO2016* case that incorporates the CPP. Consequently, DOE used the energy price projections found in the *AEO2016* No-CPP case as these energy price projections are expected to be lower, yielding more conservative estimates for consumer savings due to the energy efficiency standards.

[64] United States Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. Section E. Available at *www.whitehouse.gov/omb/memoranda/m03-21.html.*

disproportionately burdened. (Spire, No. 73 at p. 24)

With respect to Raypak's comment, DOE has addressed the appropriateness of the use of residential discount rates for the residential sector in the national level LCC analysis in this final rule, and notes that the same reasoning for use of residential discount rates applies to the subgroup analysis as well. As such, DOE is retaining the same residential sector discount rate methodology used during the March 2016 NOPR in this final rule. With respect to the comment from Spire, DOE undertook this analysis to evaluate the impacts to subgroups that may be disproportionately affected by a new or amended national standard, and sought comments from stakeholders throughout this rulemaking to help identify potential subgroups. DOE has concluded that the identified subgroups will not be significantly impacted by the new standards.

The consumer subgroup analysis is discussed in detail in chapter 11 of the final rule TSD.

J. Manufacturer Impact Analysis

1. Overview

DOE performed an MIA to estimate the financial impacts of amended energy conservation standards on manufacturers of CPB equipment and to estimate the potential impacts of such standards on employment and manufacturing capacity. The MIA has both quantitative and qualitative aspects and includes analyses of projected industry cash flows, the INPV, investments in research and development (R&D) and manufacturing capital, and domestic manufacturing employment. Additionally, the MIA seeks to determine how amended energy conservation standards might affect manufacturing employment, capacity, and competition, as well as how standards contribute to overall regulatory burden. Finally, the MIA serves to identify any disproportionate impacts on manufacturer subgroups, including small business manufacturers.

The quantitative part of the MIA primarily relies on the Government Regulatory Impact Model (GRIM), an industry cash flow model with inputs specific to this rulemaking. The key GRIM inputs include data on the industry cost structure, unit production costs, equipment shipments, manufacturer markups, and investments in R&D and manufacturing capital required to produce compliant equipment. The key GRIM outputs are the INPV, which is the sum of industry annual cash flows over the analysis period, discounted using the industry-weighted average cost of capital, and the impact to domestic manufacturing employment. The model uses standard accounting principles to estimate the impacts of more-stringent energy conservation standards on a given industry by comparing changes in INPV and domestic manufacturing employment between a no-new-standards case and the various trial standards cases (TSLs). To capture the uncertainty relating to manufacturer pricing strategies following amended standards, the GRIM estimates a range of possible impacts under different markup scenarios.

The qualitative part of the MIA addresses manufacturer characteristics and market trends. Specifically, the MIA considers such factors as a potential standard's impact on manufacturing capacity, competition within the industry, the cumulative impact of equipment-specific Federal regulations, and impacts on manufacturer subgroups. The complete MIA is outlined in chapter 12 of the final rule TSD.

DOE conducted the MIA for this rulemaking in three phases. In Phase 1 of the MIA, DOE prepared a profile of the CPB manufacturing industry based on the market and technology assessment, preliminary manufacturer interviews, and publicly available information. This included a top-down analysis of CPB manufacturers that DOE used to derive preliminary financial inputs for the GRIM (*e.g.,* revenues; materials, labor, overhead, and depreciation expenses; selling, general, and administrative expenses (SG&A); and R&D expenses). DOE also used public sources of information to further calibrate its initial characterization of the CPB manufacturing industry, including company filings of form 10–K from the SEC,[65] corporate annual reports, and the U.S. Census Bureau's ''Economic Census'',[66] and Hoover's reports[67] to conduct this analysis.

In Phase 2 of the MIA, DOE prepared an industry cash-flow analysis to quantify the potential impacts of amended energy conservation standards. The GRIM uses several factors to determine a series of annual cash flows starting with the announcement of the standard and extending over a 30-year period following the compliance date of the standard. These factors include annual expected revenues, costs of sales, SG&A and R&D expenses, taxes, and capital expenditures. In general, energy conservation standards can affect manufacturer cash flow in three distinct ways: (1) Creating a need for increased investment, (2) raising production costs per unit, and (3) altering revenue due to higher per-unit prices and changes in sales volumes.

In addition, during Phase 2, DOE developed interview guides to distribute to manufacturers of commercial packaged boilers in order to develop other key GRIM inputs, including product and capital conversion costs, and to gather additional information on the anticipated effects of energy conservation standards on revenues, direct employment, capital assets, industry competitiveness, and subgroup impacts.

In Phase 3, DOE evaluated subgroups of manufacturers that may be disproportionately impacted by energy conservation standards or that may not be represented accurately by the average cost assumptions used to develop the industry cash-flow analysis. For example, small manufacturers, niche players, or manufacturers exhibiting a cost structure that largely differs from the industry average could be more negatively affected. DOE identified one subgroup for a separate impact analysis: Small business manufacturers. The Small business subgroup is discussed in section VI.B, ''Review under the Regulatory Flexibility Act,'' and in chapter 12 of the final rule TSD.

2. Government Regulatory Impact Model

DOE uses the GRIM to analyze the financial impacts of amended energy conservation standards on the CPB industry. Standards will potentially require additional investments, raise production costs, and affect revenue through higher prices and, possibly, lower sales. The GRIM is designed to take into account several factors as it calculates a series of annual cash flows for the year standards take effect and for several years after implementation. These factors include annual expected revenues, costs of sales, increases in labor and assembly expenditures, selling and general administration costs, and taxes, as well as capital expenditures, depreciation and maintenance related to new standards. Inputs to the GRIM include manufacturing costs, shipments forecasts, and price forecasts developed in other analyses. DOE also uses industry financial parameters as inputs

[65] U.S. Securities and Exchange Commission, Annual 10–K Reports (Various Years) (Available at: *http://www.sec.gov/edgar/searchedgar/companysearch.html*).

[66] U.S. Census Bureau, Annual Survey of Manufacturers: General Statistics: Statistics for Industry Group and Industries (2014) (Available at *http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t*).

[67] Hoovers Inc. Company Profiles, Various Companies (Available at: *http://www.hoovers.com*).

for the GRIM analysis, which it develops by collecting and analyzing publicly available industry financial information. The GRIM spreadsheet uses the inputs to arrive at a series of annual cash flows, beginning in 2016 (the reference year of the manufacturer impact analysis) and continuing to 2049 (the end of the analysis period). DOE calculated INPVs by summing the stream of annual discounted cash flows during this period. For CPB manufacturers, DOE used a real discount rate of 9.5 percent, which was derived from industry financials and then modified according to feedback received during manufacturer interviews. DOE also used the GRIM to model changes in costs, shipments, investments, and manufacturer margins that could result from amended energy conservation standards.

After calculating industry cash flows and INPV, DOE compared changes in INPV between the no-new-standards case and each standard level. The difference in INPV between the no-new-standards case and a standards case represents the financial impact of the amended energy conservation standard on manufacturers at a particular TSL. As discussed previously, DOE collected this information on GRIM inputs from a number of sources, including publicly available data and confidential interviews with a number of manufacturers. GRIM inputs are discussed in more detail in the next section. The GRIM results are discussed in section V.B.2. Additional details about the GRIM, discount rate, and other financial parameters can be found in chapter 12 of the final rule TSD.

a. Government Regulatory Impact Model Key Inputs

Manufacturer Production Costs

Manufacturing higher-efficiency equipment is typically more expensive than manufacturing baseline equipment due to the use of more complex components, which are typically more costly than baseline components. The changes in the manufacturer production cost (MPC) of the analyzed equipment can affect the revenues, gross margins, and cash flow of the industry, making the equipment cost data key GRIM inputs for DOE's analysis.

In the MIA, DOE used the MSPs for each considered efficiency level that were calculated in the engineering analysis, (section IV.C.5 of this final rule) and further detailed in chapter 5 of the final rule TSD. To determine the manufacturer selling price-efficiency relationship, DOE used the equipment database from the market and technology assessment, and pricing data received from manufacturers, distributors, and contractors. Using these inputs, DOE used the methodology described in section IV.C.1 of this final rule, to calculate manufacturer selling prices of commercial packaged boilers for a given rated input (representative capacity) for each equipment class at different efficiency levels spanning from the minimum allowable standard (*i.e.,* baseline) to the maximum technologically feasible efficiency level. DOE then used equipment markups along with the equipment pricing to determine MPCs for each efficiency level. These cost breakdowns and equipment markups were validated and revised with input from manufacturers during manufacturer interviews.

Shipments Projections

The GRIM estimates manufacturer revenues based on total unit shipment projections and the distribution of these values by efficiency level. Changes in sales volumes and efficiency mix over time can significantly affect manufacturer finances. For this analysis, the GRIM uses the NIA's annual shipment projections derived from the shipments analysis from 2016 to 2049. The shipments model divides the shipments of commercial packaged boilers into specific market segments. The model starts from a historical reference year and calculates retirements and shipments by market segment for each year of the analysis period. This approach produces an estimate of the total equipment stock, broken down by age or vintage, in each year of the analysis period. In addition, the equipment stock efficiency distribution is calculated for the no-new-standards case and for each standards case for each equipment class. The NIA shipments forecasts are, in part, based on a roll-up scenario. The forecast assumes that equipment in the no-new-standards case that does not meet the standard under consideration would ''roll up'' to meet the amended standard beginning in the compliance year of 2020. In this scenario, the market share of equipment above the standard would remain unchanged. See section VI.G of this document and chapter 9 of the final rule TSD for additional details.

Product and Capital Conversion Costs

Amended energy conservation standards would cause manufacturers to incur one-time conversion costs to bring their production facilities and equipment designs into compliance. DOE evaluated the level of conversion-related expenditures that would be needed to comply with each considered efficiency level in each equipment class. For the MIA, DOE classified these conversion costs into two major groups: (1) Capital conversion costs; and (2) product conversion costs. Capital conversion costs are one-time investments in property, plant, and equipment necessary to adapt or change existing production facilities such that new compliant product designs can be fabricated and assembled. Product conversion costs are one-time investments in research, development, testing, marketing, and other non-capitalized costs necessary to make product designs comply with amended energy conservation standards.

To evaluate the level of capital conversion expenditures, manufacturers would likely incur to comply with amended energy conservation standards, DOE used manufacturer interviews to gather data on the anticipated level of capital investment that would be required at each efficiency level. Based on equipment listings, provided by the engineering analysis, DOE developed industry average capital expenditure by weighting manufacturer feedback based on model offerings as a proxy for market share. DOE supplemented manufacturer comments and tailored its analyses with information obtained during engineering analysis described in chapter 5 of the final rule TSD.

DOE assessed the product conversion costs at each considered efficiency level by integrating data from quantitative and qualitative sources. DOE received feedback regarding the potential costs of each efficiency level from multiple manufacturers to estimate product conversion costs (*e.g.,* research & development (R&D) expenditures, certification costs). DOE combined this information with product listings to estimate how much manufacturers would have to spend on product development and product testing at each efficiency level. Manufacturer data was aggregated to better reflect the industry as a whole and to protect confidential information.

In general, DOE assumes that all conversion-related investments occur between the year of publication of the final rule and the year by which manufacturers must comply with the amended standards. The conversion cost figures used in the GRIM can be found in section V.B.2 of this document. DOE received limited information on the conversion costs for oil-fired equipment in interviews. Using equipment listing counts, DOE scaled the feedback on gas-fired equipment to estimate the conversion cost for oil-fired

equipment. For additional information on the estimated product and capital conversion costs, see chapter 12 of the final rule TSD.

b. Government Regulatory Impact Model Scenarios

Manufacturer Markup Scenarios

As discussed in the previous section, MSPs include direct manufacturing production costs (*i.e.,* labor, materials, and overhead estimated in DOE's MPCs) and all non-production costs (*i.e.,* SG&A, R&D, and interest), along with profit. To calculate the MSPs in the GRIM, DOE applied manufacturer markups to the MPCs estimated in the engineering analysis for each equipment class and efficiency level. Modifying these markups in the standards case yields different sets of impacts on manufacturers. For the MIA, DOE modeled two standards-case manufacturer markup scenarios to represent the uncertainty regarding the potential impacts on prices and profitability for manufacturers following the implementation of amended energy conservation standards: (1) A preservation of gross margin percentage markup scenario; and (2) a preservation of per-unit operating profit markup scenario. These scenarios lead to different manufacturer markup values that, when applied to the inputted MPCs, result in varying revenue and cash-flow impacts.

Under the preservation of gross margin percentage markup scenario, DOE applied a single uniform ''gross margin percentage'' manufacturer markup across all efficiency levels, which assumes that following amended standards, manufacturers would be able to maintain the same amount of profit as a percentage of revenue at all efficiency levels within an equipment class. As production costs increase with efficiency, this scenario implies that the absolute dollar markup will increase as well. Based on publicly available financial information for manufacturers of commercial packaged boilers, as well as comments from manufacturer interviews, DOE assumed the average manufacturer markup—which includes SG&A expenses, R&D expenses, interest, and profit—to be 1.41 for small gas-fired hot water, small gas-fired steam boilers, large gas-fired hot water boilers, and large oil-fired hot water boilers; 1.40 for small oil-fired hot water boilers; 1.38 for small oil-fired steam boilers; and 1.37 for large gas-fired and oil-fired steam boilers. During manufacturer interviews, manufacturers noted that they would not expect to maintain their current margins under a stringent energy conservation standard. Thus, this manufacturer markup scenario represents the upper bound of the CPB industry's profitability in the standards case.

DOE includes the preservation of per-unit operating profit scenario in its analysis to reflect manufacturer concern that would not be able to maintain current markups in the standards case, given the highly competitive nature of the CPB market. In this scenario, manufacturer markups are set so that operating profit one year after the compliance date of amended energy conservation standards is the same as in the no-new-standards case on a per-unit basis. In other words, manufacturers are not able to garner additional operating profit from the higher production costs and the investments that are required to comply with the amended standards; however, they are able to maintain the same per-unit operating profit in the standards case that was earned in the no-new-standards case. Therefore, operating margin in percentage terms is reduced between the no-new-standards case and standards case. DOE adjusted the manufacturer markups in the GRIM at each TSL to yield approximately the same earnings before interest and taxes in the standards case as in the no-new-standards case. The preservation of per-unit operating profit markup scenario represents the lower bound of industry profitability in the standards case. In this scenario, similar to the preservation of gross margin percentage markup scenario, manufacturers are not able to fully pass through to consumers the additional costs necessitated by CPB standards.

3. Discussion of Comments

During the notice of proposed rulemaking public meetings, and in written comments in the response to the March 2016 NOPR, interested parties commented on the assumptions and results of the manufacturer impact analysis. Oral and written comments addressed several topics, including concerns regarding the elimination of natural draft equipment, impacts on employment, conversion costs, cumulative regulatory burden, impacts on small businesses, equipment distribution, and the lessening of competition. Comments regarding the impacts on small businesses are discussed in section V.B.2, all other MIA-related comments are discussed below.

a. Elimination of Natural Draft Equipment

Several stakeholders expressed concern that setting a standard at or near condensing levels would force the obsolescence of certain types of commercial packaged boilers. One manufacturer commented that if a condensing level is adopted by DOE, it is possible that natural draft boilers and steam boilers will become obsolete in the CPB industry. (Spire, No. 73, at pp. 23–24) Spire stated that purchasers would be limited to mechanical draft boilers using condensing combustion technology, which are significantly more costly to purchase, maintain and install. BHI commented that in the small gas hot water equipment class in particular, it is possible that a stringent standard will result in large scale obsolescence of existing cast iron boilers since there are many technical constraints for marginal gains in efficiency, such as venting restrictions. (BHI, No. 71 at p. 20) To limit significantly negative industry impacts on manufacturers and equipment offerings, Lochinvar recommended that DOE does not set a standard that requires condensing technology. (Lochinvar, No. 31 at p. 6)

Additionally, during the preliminary stage, Lochinvar stated that a majority of heat exchangers for condensing technology are imported. Lochinvar believes overhead and equipment used to produce non-condensing heat exchangers may become obsolete if condensing technology is effectively mandated. (Lochinvar, Public Meeting Transcript, No. 39 at p. 205)

DOE understands that a stringent standard, specifically condensing technology, may negatively impact INPV and limit industry equipment offerings. The adopted standards do not mandate condensing technology for any equipment class. This final rule adopts a standard lower than the proposed levels in the NOPR for small gas hot water, in part to mitigate the potential for negative impacts on manufacturers and end-users.

b. Impacts on Direct Employment

AHRI and ABMA asserted concerns about DOE's direct employment estimates being too low. Two stakeholders, representing industry trade associations, representing industry trade associations, stated that the amended rule will decrease employment, contrary to DOE's analysis. (AHRI, Public Meeting Transcript, No. 61 at p. 220) (ABMA, Public Meeting Transcript, No. 61 at p. 222) In written comments, AHRI submitted estimates for HVAC manufacturing employment but did not present employment impacts specific to the covered equipment, commercial packaged boilers. (AHRI, No. 78 at p. 12)

At the NOPR stage, DOE estimated production employment to be 464 production workers in the no-new-standards case for the CPB industry in 2019. For the final rule, DOE updated its analysis based on 2014 U.S. Census data, the updated engineering analysis, and the updated shipments analysis. DOE's revised final rule analysis forecasts that the industry will employ 594 production and 360 non-production workers in the no-new-standards case in 2020. The final rule analysis presents an updated set of direct employment impacts that range from a potential net loss of 484 jobs to a potential net gain of 7 at the amended level. Therefore, DOE's analysis agrees with statements from the industry that there is a risk of decreasing the number of manufacturing jobs related to the covered equipment.

In terms of estimating manufacturing jobs, DOE's direct employment analysis is based on three primary inputs: CPB shipments in the standards year from the shipments analysis, labor content of the covered equipment from the engineering analysis, and an average production worker wage level based on U.S. Census Bureau's 2014 Annual Survey of Manufacturers (ASM) [68] data for NAICS Code 333414.[69] In the final rule analysis, DOE estimates there are 32,416 unit shipments in 2020 at the amended standard level. The engineering analysis shows that labor content can range from 6 percent to 20 percent of the MPC, depending on the equipment class and model. Combining unit shipments and labor content, DOE estimates industry production labor expenditures of $21.2 million. Based on 2014 ASM data, DOE estimates average production workers wages of $21.06 an hour, with an average of 1,880 production hours worked in a year. Combining these inputs, DOE estimates 954 domestic workers supporting the manufacture and assembly of covered equipment in the CPB industry in 2020 in the no-new-standards case.

This estimated number of domestic production workers only accounts for the labor required to manufacture the most basic equipment that meets the applicable standard—it does not take into account additional features that manufacturers use to differentiate premium equipment, add-ons, or components that do not contribute to heating function. Additional detail on the direct employment analysis can be found in chapter 12 of the final rule TSD.

Furthermore, AHRI stated, ''DOE notes that 'if a CPB manufacturer chose to keep their current production in the U.S., domestic employment could increase at each TSL.' 81 FR 15899. Given the current issues with outsourcing, including that DOE in past rules has concluded manufacturers may move production abroad in response to increased production costs, this is a huge assumption for which DOE provides no basis in fact.'' (AHRI, No. 78 at p. 7)

DOE presents a range of results for direct employment. At the upper bound, DOE presents direct employment based on current production locations, estimated sales figures from the shipments analysis, labor expenditures from the GRIM, and production labor wage rates from the U.S. Census Annual Survey of Manufacturers. Currently, the vast majority of CPB equipment sold into the domestic market is manufactured in the United States and Canada. While some components are imported, the CPB industry has not seen the dramatic shift to overseas manufacturing associated with many consumer appliances. At the adopted level, the production worker skills and the capital equipment necessary to produce minimally compliant equipment does not vary significantly from the no-new-standards case. At the lower bound, DOE presents a loss of employment where job losses scale with the portion of equipment that does not meet the standard. Additional information and full calculations are presented in section V.B.2 of this document.

Additionally, BHI stated in a written comment that the standard will shift the market away from cast iron commercial boilers, which will ultimately reduce the production volume at Casting Solutions, a cast iron foundry and subsidiary of BHI. The amended standard would result in job losses, including eliminating 80 union manufacturing jobs and 20 managerial jobs at Casting Solutions. (BHI, No. 71 at p. 20)

In response, DOE's direct employment analysis presents a range of potential impacts and includes the potential for job loss. The lower bound shows a loss of 484 jobs, including both production and non-production workers, at TSL 2 for manufacturers of the covered equipment. However, these job impacts do not include employment from suppliers or distributors. DOE's production worker analysis focuses on direct employment, as defined in section V.B.2.b of this document and chapter 12 of the final rule TSD.

c. Conversion Costs

AHRI notes that while it supports the use of alternative efficiency determination methods (AEDMs) for certification, the creation, validation, and maintenance of AEDMs is an additional burden and cost to manufacturers. They believe the additional burden and cost should be included in DOE's analysis. (AHRI, No. 76 at p. 8)

At this time, DOE does not include AEDMs as an additional cumulative burden or cost to manufacturers in its analysis. For certain consumer products and commercial equipment, DOE's existing testing regulations include allowing the use of an AEDM, in lieu of action testing, to simulate the energy consumption or efficiency of certain basic models of covered equipment under DOE's test procedure conditions. The use of AEDMs is optional and, for compliance certification purposes, reduces the need for sample units and the overall testing burden for manufacturers of expensive or highly custom basic models.

≤d. Cumulative Regulatory Burden

With regard to the rulemakings DOE identified under cumulative regulatory burden, AHRI states that five of the nine identified rulemakings do not have known expected conversion costs. (AHRI, No. 76 at p. 8) Furthermore Weil-McLain commented that DOE's simultaneous and cumulative rulemaking creates a significant burden for consumers and the industry. (Weil-McLain, No. 67 at p. 4)

In response, DOE has performed an analysis of cumulative regulatory burden (CRB) in section V.B.2.e of this document. Cumulative burden is a factor DOE considers in its weighting of costs and benefits. The five rules identified by AHRI do not yet have a published NOPR. Any estimation of burdens before a standard level is proposed would be speculative. Consumer burden is discussed in section IV.H.3.

K. Emissions Analysis

The emissions analysis consists of two components. The first component estimates the effect of potential energy conservation standards on power sector and site (where applicable) combustion emissions of CO_2, NO_X, SO_2, and Hg. The second component estimates the impacts of potential standards on

[68] U.S. Census Bureau, Annual Survey of Manufacturers: General Statistics: Statistics for Industry Groups and Industries (2014) (Available at: *http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t*).

[69] At the March 2016 NOPR stage, DOE used NAICS code 333415. For the final rule, DOE determined that NAICS Code, 333414 ''Heating Equipment (except Warm Air Furnaces) Manufacturing Industry,'' is more appropriate and relied on U.S. Census data from this code for its analyses.

emissions of two additional greenhouse gases, CH_4 and N_2O, as well as the reductions to emissions of all species due to ''upstream'' activities in the fuel production chain. These upstream activities comprise extraction, processing, and transporting fuels to the site of combustion. The associated emissions are referred to as upstream emissions.

The analysis of power sector emissions uses marginal emissions factors that were derived from data in *AEO2016,* as described in section IV.M of this document. The methodology is described in chapter 13 and chapter 15 of the final rule TSD.

Combustion emissions of CH_4 and N_2O are estimated using emissions intensity factors published by the EPA, GHG Emissions Factors Hub.[70] The FFC upstream emissions are estimated based on the methodology described in appendix 10D of the final rule TSD. The upstream emissions include both emissions from fuel combustion during extraction, processing, and transportation of fuel, and ''fugitive'' emissions (direct leakage to the atmosphere) of CH_4 and CO_2.

The emissions intensity factors are expressed in terms of physical units per MWh or MBtu of site energy savings. Total emissions reductions are estimated using the energy savings calculated in the national impact analysis.

For CH_4 and N_2O, DOE calculated emissions reduction in tons and also in terms of units of carbon dioxide equivalent (CO_{2eq}). Gases are converted to CO_{2eq} by multiplying each ton of gas by the global warming potential (GWP) of the gas over a 100-year time horizon. Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change,[71] DOE used GWP values of 28 for CH_4 and 265 for N_2O.

Because the on-site operation of commercial packaged boilers requires combustion of fossil fuels and results in emissions of CO_2, NO_X, and SO_2 at the sites where these appliances are used, DOE also accounted for the reduction in these site emissions and the associated upstream emissions due to potential standards. Site emissions of the above gases were estimated using emissions intensity factors from an EPA publication.[72]

The *AEO* incorporates the projected impacts of existing air quality regulations on emissions. *AEO2016* generally represents current legislation and environmental regulations, including recent government actions, for which implementing regulations were available as of October 31, 2015. DOE's estimation of impacts accounts for the presence of the emissions control programs discussed in the following paragraphs.

SO_2 emissions from affected electric generating units (EGUs) are subject to nationwide and regional emissions cap-and-trade programs. Title IV of the Clean Air Act sets an annual emissions cap on SO_2 for affected EGUs in the 48 contiguous states and the District of Columbia (D.C.). (42 U.S.C. 7651 *et seq.*) SO_2 emissions from 28 eastern states and D.C. were also limited under the Clean Air Interstate Rule (CAIR). 70 FR 25162 (May 12, 2005). CAIR created an allowance-based trading program that operates along with the Title IV program. In 2008, CAIR was remanded to EPA by the U.S. Court of Appeals for the D.C. Circuit, but it remained in effect.[73] In 2011, EPA issued a replacement for CAIR, the Cross-State Air Pollution Rule (CSAPR). 76 FR 48208 (Aug. 8, 2011). On August 21, 2012, the D.C. Circuit issued a decision to vacate CSAPR,[74] and the court ordered EPA to continue administering CAIR. On April 29, 2014, the U.S. Supreme Court reversed the judgment of the D.C. Circuit and remanded the case for further proceedings consistent with the Supreme Court's opinion.[75] On October 23, 2014, the D.C. Circuit lifted the stay of CSAPR.[76] Pursuant to this action, CSAPR went into effect (and CAIR ceased to be in effect) as of January 1, 2015.[77] *AEO2016* incorporates implementation of CSAPR.

The attainment of emissions caps is typically flexible among EGUs and is enforced through the use of emissions allowances and tradable permits. Under existing EPA regulations, any excess SO_2 emissions allowances resulting from the lower electricity demand caused by the adoption of an efficiency standard could be used to permit offsetting increases in SO_2 emissions by any regulated EGU. In past years, DOE recognized that there was uncertainty about the effects of efficiency standards on SO_2 emissions covered by the existing cap-and-trade system, but it concluded that negligible reductions in power sector SO_2 emissions would occur as a result of standards.

Beginning in 2016, however, SO_2 emissions will fall as a result of the Mercury and Air Toxics Standards (MATS) for power plants. 77 FR 9304 (Feb. 16, 2012). In the MATS final rule, EPA established a standard for hydrogen chloride as a surrogate for acid gas hazardous air pollutants (HAP), and also established a standard for SO_2 (a non-HAP acid gas) as an alternative equivalent surrogate standard for acid gas HAP. The same controls are used to reduce HAP and non-HAP acid gas; thus, SO_2 emissions will be reduced as a result of the control technologies installed on coal-fired power plants to comply with the MATS requirements for acid gas. *AEO2016* assumes that, in order to continue operating, coal plants must have either flue gas desulfurization or dry sorbent injection systems installed by 2016. Both technologies, which are used to reduce acid gas emissions, also reduce SO_2 emissions. Under the MATS, emissions will be far below the cap established by CSAPR, so it is unlikely that excess SO_2 emissions allowances resulting from the lower electricity demand would be needed or used to permit offsetting increases in SO_2 emissions by any regulated EGU.[78] Therefore, DOE

[70] Available at *www2.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub.*

[71] Intergovernmental Panel on Climate Change. Anthropogenic and Natural Radiative Forcing. Chapter 8 in *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P.M. Midgley, Editors. 2013. Cambridge University Press: Cambridge, United Kingdom and New York, NY, USA.

[72] U.S. Environmental Protection Agency, External Combustion Sources, In *Compilation of Air Pollutant Emission Factors,* AP–42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 1. Available at *www3.epa.gov/ttn/chief/ap42/index.html.*

[73] *See North Carolina* v. *EPA,* 550 F.3d 1176 (D.C. Cir. 2008); *North Carolina* v. *EPA,* 531 F.3d 896 (D.C. Cir. 2008).

[74] *See EME Homer City Generation, LP* v. *EPA,* 696 F.3d 7, 38 (D.C. Cir. 2012), *cert. granted,* 81 U.S.L.W. 3567, 81 U.S.L.W. 3696, 81 U.S.L.W. 3702 (U.S. June 24, 2013) (No. 12–1182).

[75] *See EPA* v. *EME Homer City Generation,* 134 S.Ct. 1584, 1610 (U.S. 2014). The Supreme Court held in part that EPA's methodology for quantifying emissions that must be eliminated in certain States due to their impacts in other downwind States was based on a permissible, workable, and equitable interpretation of the Clean Air Act provision that provides statutory authority for CSAPR.

[76] See *Georgia* v. *EPA,* Order (D.C. Cir. filed October 23, 2014) (No. 11–1302).

[77] On July 28, 2015, the D.C. Circuit issued its opinion regarding the remaining issues raised with respect to CSAPR that were remanded by the Supreme Court. The D.C. Circuit largely upheld CSAPR but remanded to EPA without *vacatur* certain States' emission budgets for reconsideration. *EME Homer City Generation, LP* v. *EPA,* 795 F.3d 118 (D.C. Cir. 2015).

[78] DOE notes that on June 29, 2015, the U.S. Supreme Court ruled that the EPA erred when the agency concluded that cost did not need to be considered in the finding that regulation of hazardous air pollutants from coal- and oil-fired electric utility steam generating units (EGUs) is appropriate and necessary under section 112 of the Clean Air Act (CAA). *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015). The Supreme Court did not vacate the MATS rule, and DOE has tentatively determined

Continued

concludes that energy conservation standards that decrease electricity generation will generally reduce SO_2 emissions in 2016 and beyond.

CSAPR established a cap on NO_X emissions in 28 eastern states and the District of Columbia. Energy conservation standards are expected to have little effect on NO_X emissions in those states covered by CSAPR because excess NO_X emissions allowances resulting from the lower electricity demand could be used to permit offsetting increases in NO_X emissions from other facilities. However, standards would be expected to reduce NO_X emissions in the states not affected by the caps, so DOE estimated NO_X emissions reductions from the standards considered in this document for these states.

The MATS limit mercury emissions from power plants, but they do not include emissions caps and, as such, DOE's energy conservation standards would likely reduce Hg emissions. DOE estimated mercury emissions reduction using emissions factors based on *AEO2016,* which incorporates the MATS.

The *AEO2016* Reference case (and some other cases) assumes implementation of the Clean Power Plan (CPP), which is the EPA program to regulate CO_2 emissions at existing fossil-fired electric power plants.[79] DOE used the *AEO2016* No-CPP case as a basis for developing emissions factors for the electric power sector to be consistent with its use of the No-CPP case in the NIA.[80]

Spire questioned DOE's benefit analyses period and argues that DOE calculates benefits over an unreasonably long period of time. Spire asserts that DOE's approach assumes that the proposed standard—once adopted—would remain unaltered once it is adopted, and believes that this assumption is not credible, and further states that DOE assumes that there will be no material advance in efficiency over the next 30 years, and that DOE will not be triggered to review the standard in the future due to a 6-year review or an ASHRAE 90.1 update trigger over the next 30 years. Further, Spire questions DOE's ability to make predictions regarding items such as energy prices or equipment sales 30 years from now, and thus it believes the analysis cannot be described as clear and convincing evidence of the benefits of the proposed standards. Spire states that DOE should focus not just on the projected life of the equipment, but on the projected life of the standard it proposes. (Spire, No. 73 at pp. 19–21) AHRI commented that DOE violates EPCA requirements for the benefits of a proposed standard to exceed its burden by giving emissions savings disproportionate weight over other factors, noting that there is nothing in the statute that indicates that Congress indicated that this be anything other than an equal weighting of factors, and that the global indirect emissions and SCC reductions extend well beyond the life of the equipment and the relevant period for measuring benefits relative to costs, thus implying disproportionate weighting for these benefits. (AHRI, No. 76 at pp. 11–12) AHRI specifically points out that the benefits from SCC extend through 2300, and that benefits to consumers accrue after 2050 for equipment purchased in 2019–2048, and that incremental variable and fixed costs incurred by manufacturers are included in earlier years in preparation for the rule. AHRI states that DOE provides no justification for the exclusion of many costs that manufacturers might incur after 2050, in harmony with the time period DOE uses to measure benefits. (AHRI, No. 76 at p. 11)

In response, DOE considers the impacts over the life of the commercial packaged boiler equipment units shipped in the 30-year analysis period. With respect to energy cost savings, impacts continue to be accumulated until all of the equipment shipped in the 30-year analysis period is retired from service. Regarding the statement that there would be no material advance over the next 30 years, DOE's no-new-standards case assumptions shows a continued improvement in efficiency over the analysis period. In addition, if DOE is triggered to review, and if it ultimately amends standards, the benefits calculated are based only on the additional improvements in efficiency since the previous standards were established. Hence, DOE does not over-estimate the benefits as implied by Spire in this regard. DOE understands the difficulty in projecting energy prices or markets and relies on the best available information, as well as the input of stakeholders, during the rulemaking process. As noted in this response to Spire's comments, DOE already does consider the projected life of the standard within its 30-year analysis period, and any further increases in future rulemakings are dealt with and accounted for correctly in those rulemakings, in essence using the efficiency standards established in this rule as the baseline levels for any new no-new-standards case analysis for those rulemakings. With regard to AHRI's comments, emissions impacts from purchased equipment continue until the emissions produced by the boilers shipped during the analysis period are essentially eliminated from the atmosphere. CO_2 that is emitted during the lifetime of the equipment has a long residence time in the atmosphere, and, thus, contributes to radiative forcing, which affects global climate, for a long time. In the case of both manufacturer economic costs and benefits and the value of CO_2 emissions reductions, DOE is accounting for the lifetime impacts of equipment shipped in the same analysis period.

L. Monetizing Carbon Dioxide and Other Emissions Impacts

As part of the development of this final rule, DOE considered the estimated monetary benefits from the reduced emissions of CO_2 and NO_X that are expected to result from each of the TSLs considered. In order to make this calculation analogous to the calculation of the NPV of consumer benefit, DOE considered the reduced emissions expected to result over the lifetime of equipment shipped in the projection period for each TSL. This section summarizes the basis for the values used for each of these emissions and presents the values considered in this document.

For this final rule, DOE relied on a set of values for the social cost of carbon

that the Court's decision on the MATS rule does not change the assumptions regarding the impact of energy conservation standards on SO_2 emissions. Further, the Court's decision does not change the impact of the energy conservation standards on mercury emissions. The EPA, in response to the U.S. Supreme Court's direction, has now considered cost in evaluating whether it is appropriate and necessary to regulate coal- and oil-fired EGUs under the CAA. EPA concluded in its final supplemental finding that a consideration of cost does not alter the EPA's previous determination that regulation of hazardous air pollutants, including mercury, from coal- and oil-fired EGUs, is appropriate and necessary. 79 FR 24420 (April 25, 2016). The MATS rule remains in effect, but litigation is pending in the D.C. Circuit Court of Appeals over EPA's final supplemental finding MATS rule.

[79] U.S. Environmental Protection Agency, ''Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units'' (Washington, DC: October 23, 2015). *https://www.federalregister.gov/articles/2015/10/23/2015-22842/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.*

[80] As DOE has not modeled the effect of CPP during the 30 year analysis period of this rulemaking, there is some uncertainty as to the magnitude and overall effect of the energy efficiency standards. With respect to estimated CO_2 and NO_X emissions reductions and their associated monetized benefits, if implemented the CPP would result in an overall decrease in CO_2 emissions from electric generating units (EGUs), and would thus likely reduce some of the estimated CO_2 reductions associated with this rulemaking.

(SCC) that was developed by a Federal interagency process. The basis for these values is summarized in the next section, and a more detailed description of the methodologies used is provided as an appendix to chapter 14 of the final rule TSD.

1. Social Cost of Carbon

The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) climate-change-related changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services. Estimates of the SCC are provided in dollars per metric ton of CO_2. A domestic SCC value is meant to reflect the value of damages in the United States resulting from a unit change in CO_2 emissions, while a global SCC value is meant to reflect the value of damages worldwide.

Under section 1(b)(6) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), agencies must, to the extent permitted by law, assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. The purpose of the SCC estimates presented here is to allow agencies to incorporate the monetized social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

As part of the interagency process that developed the SCC estimates, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. The main objective of this process was to develop a range of SCC values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SCC estimates used in the rulemaking process.

a. Monetizing Carbon Dioxide Emissions

When attempting to assess the incremental economic impacts of CO_2 emissions, the analyst faces a number of challenges. A report from the National Research Council [81] points out that any assessment will suffer from uncertainty, speculation, and lack of information about (1) future emissions of greenhouse gases, (2) the effects of past and future emissions on the climate system, (3) the impact of changes in climate on the physical and biological environment, and (4) the translation of these environmental impacts into economic damages. As a result, any effort to quantify and monetize the harms associated with climate change will raise questions of science, economics, and ethics and should be viewed as provisional.

Despite the limits of both quantification and monetization, SCC estimates can be useful in estimating the social benefits of reducing CO_2 emissions. Although any numerical estimate of the benefits of reducing CO_2 emissions is subject to some uncertainty, that does not relieve DOE of its obligation to attempt to factor those benefits into its cost-benefit analysis. Moreover, the interagency working group (IWG) SCC estimates are well supported by the existing scientific and economic literature. As a result, DOE has relied on the IWG SCC estimates in quantifying the social benefits of reducing CO_2 emissions. DOE estimates the benefits from reduced (or costs from increased) emissions in any future year by multiplying the change in emissions in that year by the SCC values appropriate for that year. The NPV of the benefits can then be calculated by multiplying each of these future benefits by an appropriate discount factor and summing across all affected years.

It is important to emphasize that the current SCC values reflect the IWG's best assessment, based on current data, of the societal effect of CO_2 emissions. The IWG is committed to updating these estimates as the science and economic understanding of climate change and its impacts on society improves over time. In the meantime, the interagency group will continue to explore the issues raised by this analysis and consider public comments as part of the ongoing interagency process.

b. Development of Social Cost of Carbon Values

In 2009, an interagency process was initiated to offer a preliminary assessment of how best to quantify the benefits from reducing CO_2 emissions. To ensure consistency in how benefits are evaluated across agencies, the Administration sought to develop a transparent and defensible method, specifically designed for the rulemaking process, to quantify avoided climate change damages from reduced CO_2 emissions. The interagency group did not undertake any original analysis. Instead, it combined SCC estimates from the existing literature to use as interim values until a more comprehensive analysis could be conducted. The outcome of the preliminary assessment by the interagency group was a set of five interim values: Global SCC estimates for 2007 (in 2006$) of $55, $33, $19, $10, and $5 per metric ton of CO_2. These interim values represented the first sustained interagency effort within the U.S. government to develop an SCC for use in regulatory analysis. The results of this preliminary effort were presented in several proposed and final rules.

c. Current Approaches and Key Assumptions

After the release of the interim values, the interagency group reconvened on a regular basis to generate improved SCC estimates. Specifically, the group considered public comments and further explored the technical literature in relevant fields. The interagency group relied on three integrated assessment models commonly used to estimate the SCC—the FUND, DICE, and PAGE models.[82] These models are frequently cited in the peer-reviewed literature and were used in the last assessment of the Intergovernmental Panel on Climate Change (IPCC). Each model was given equal weight in the SCC values that were developed.

Each model takes a slightly different approach to model how changes in emissions result in changes in economic damages. A key objective of the interagency process was to enable a consistent exploration of the three models while respecting the different approaches to quantifying damages taken by the key modelers in the field. An extensive review of the literature

[81] National Research Council. 2009. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use.* National Academies Press: Washington, DC.

[82] The DICE (Dynamic Integrated Climate and Economy) model by William Nordhaus evolved from a series of energy models and was first presented in 1990 (Nordhaus and Boyer 2000, Nordhaus 2008). The PAGE (Policy Analysis of the Greenhouse Effect) model was developed by Chris Hope in 1991 for use by European decision-makers in assessing the marginal impact of carbon emissions (Hope 2006, Hope 2008). The FUND (Climate Framework for Uncertainty, Negotiation, and Distribution) model, developed by Richard Tol in the early 1990s, originally to study international capital transfers in climate policy is now widely used to study climate impacts (*e.g.,* Tol 2002a, Tol 2002b, Anthoff et al. 2009, Tol 2009).

was conducted to select three sets of input parameters for these models—climate sensitivity, socio-economic and emissions trajectories, and discount rates. A probability distribution for climate sensitivity was specified as an input into all three models. In addition, the interagency group used a range of scenarios for the socio-economic parameters and a range of values for the discount rate. All other model features were left unchanged, relying on the model developers' best estimates and judgments.

In 2010, the interagency group selected four sets of SCC values for use in regulatory analyses. Three sets of values are based on the average SCC from the three integrated assessment models, at discount rates of 2.5, 3, and 5 percent. The fourth set, which represents the 95th-percentile SCC estimate across all three models at a 3-percent discount rate, was included to represent higher than expected impacts from climate change further out in the tails of the SCC distribution. The values grow in real terms over time. Additionally, the interagency group determined that a range of values from 7 percent to 23 percent should be used to adjust the global SCC to calculate domestic effects, [83] although preference is given to consideration of the global benefits of reducing CO_2 emissions. Table IV.11 presents the values in the 2010 interagency group report, [84] which is reproduced in appendix 14A of the final rule TSD.

TABLE IV.11—ANNUAL SCC VALUES FROM 2010 INTERAGENCY REPORT, 2010–2050

[2007$ per metric ton CO_2]

Year	Discount rate and statistic			
	5%	3%	2.5%	3%
	Average	Average	Average	95th Percentile
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

In 2013 the IWG released an update (which was revised in July 2015) that contained SCC values that were generated using the most recent versions of the three integrated assessment models that have been published in the peer-reviewed literature.[85] DOE used these values for this final rule.

Table IV.12 shows the updated sets of SCC estimates from the latest interagency update in 5-year increments from 2010 through 2050. The full set of annual SCC estimates from 2010 through 2050 is reported in appendix 14B of the final rule TSD. The central value that emerges is the average SCC across models at a 3-percent discount rate. However, for purposes of capturing the uncertainties involved in regulatory impact analysis, the interagency group emphasizes the importance of including all four sets of SCC values.

Regarding the use of discount rates in the development of SCC, AHRI commented that DOE should use discount rates in the analysis consistently, noting that DOE groups results from its analysis of different factors using different discount rates into one overall result that does not portray an accurate representation of true cost to manufacturers and to consumers. Further, AHRI asserts that DOE is deviating from the guidance of OMB Circular No. A–94 to utilize a 7-percent discount rate, but goes on to say that if a different discount rate is appropriate, DOE should clearly present its reasoning so that stakeholders can understand the basis and provide comment. (AHRI, No. 76 at p. 8)

For the purposes of the development of the National NPV, DOE uses the guidance provided by OMB Circular No. A–94; however, in response to the concern raised regarding the use of different discount rates in different portions of the analysis, DOE notes that it used the specific discount rates as recommended by the interagency group that developed the SCC values for the monetization of emissions. A full discussion of these discount rates is provided in Appendix 14A of the final rule TSD.

[83] It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no *a priori* reason why domestic benefits should be a constant fraction of net global damages over time.

[84] United States Government–Interagency Working Group on Social Cost of Carbon. *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* February 2010. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf.*

[85] United States Government–Interagency Working Group on Social Cost of Carbon. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* May 2013. Revised July 2015. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf.*

TABLE IV.12—ANNUAL SCC VALUES FROM 2013 INTERAGENCY UPDATE (REVISED JULY 2015), 2010–2050

[2007$ per metric ton CO_2]

Year	Discount rate and statistic			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
2010	10	31	50	86
2015	11	36	56	105
2020	12	42	62	123
2025	14	46	68	138
2030	16	50	73	152
2035	18	55	78	168
2040	21	60	84	183
2045	23	64	89	197
2050	26	69	95	212

It is important to recognize that a number of key uncertainties remain, and that current SCC estimates should be treated as provisional and revisable since they will evolve with improved scientific and economic understanding. The interagency group also recognizes that the existing models are imperfect and incomplete. The National Research Council report mentioned previously points out that there is tension between the goal of producing quantified estimates of the economic damages from an incremental ton of carbon and the limits of existing efforts to model these effects. There are a number of analytic challenges that are being addressed by the research community, including research programs housed in many of the Federal agencies participating in the interagency process to estimate the SCC. The interagency group intends to periodically review and reconsider those estimates to reflect increasing knowledge of the science and economics of climate impacts, as well as improvements in modeling.[86]

In summary, in considering the potential global benefits resulting from reduced CO_2 emissions, DOE used the values from the 2013 interagency report (revised July 2015), adjusted to 2015$ using the implicit price deflator for gross domestic product (GDP) from the Bureau of Economic Analysis. For each of the four SCC cases specified, the values used for emissions in 2015 were $12.4, $40.6, $63.2, and $118 per metric ton avoided (values expressed in 2015$). DOE derived values after 2050 based on the trend in 2010 through 2050 in each of the four cases in the interagency update.

DOE multiplied the CO_2 emissions reduction estimated for each year by the SCC value for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SCC values in each case.

2. Social Cost of Other Air Pollutants

As noted previously, DOE has estimated how the considered energy conservation standards would reduce site NO_X emissions nationwide and decrease power sector NO_X emissions in those 22 states not affected by the CAIR.

DOE estimated the monetized value of NO_X emissions reductions from electricity generation using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards.[87] The report includes high and low values for NO_X (as $PM_{2.5}$) for 2020, 2025, and 2030 using discount rates of 3 percent and 7 percent; these values are presented in appendix 14C of the final rule TSD. DOE primarily relied on the low estimates to be conservative.[88] The national average low values for 2020 (in 2015$) are $3,187/ton at 3-percent discount rate and $2,869/ton at 7-percent discount rate. DOE developed values specific to the end-use category for commercial packaged boilers using a method described in appendix 14C of the final rule TSD. For this analysis DOE used linear interpolation to define values for the years between 2020 and 2025 and between 2025 and 2030; for years beyond 2030 the value is held constant.

DOE estimated the monetized value of NO_X emissions reductions from gas commercial packaged boilers using benefit per ton estimates from the EPA's ''Technical Support Document Estimating the Benefit per Ton of Reducing $PM_{2.5}$ Precursors from 17 Sectors.''[89] Although none of the sectors refers specifically to residential and commercial buildings, DOE determined that the sector called ''Area sources'' is a reasonable proxy for residential and commercial buildings. ''Area sources'' represents all emission sources for which states do not have exact (point) locations in their emissions inventories. Since exact locations would tend to be associated with larger sources, ''area sources'' would be fairly representative of small dispersed sources like homes and businesses. The EPA Technical Support Document provides high and low estimates for 2016, 2020, 2025, and 2030 at 3- and 7-percent discount rates. As with the benefit per ton estimates for NO_X emissions reductions from

[86] In November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SCC estimates. 78 FR 70586. In July 2015 OMB published a detailed summary and formal response to the many comments that were received: this is available at *https://www.whitehouse.gov/blog/2015/07/02/estimating-benefits-carbon-dioxide-emissions-reductions.* It also stated its intention to seek independent expert advice on opportunities to improve the estimates, including many of the approaches suggested by commenters.

[87] Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.* See Tables 4A–3, 4A–4, and 4A–5 in the report. The U.S. Supreme Court has stayed the rule implementing the Clean Power Plan until the current litigation against it concludes. Chamber of Commerce, et al. v. EPA, et al., Order in Pending Case, 577 U.S. ____(2016). However, the benefit-per-ton estimates established in the Regulatory Impact Analysis for the Clean Power Plan are based on scientific studies that remain valid irrespective of the legal status of the Clean Power Plan.

[88] For the monetized NO_X benefits associated with $PM_{2.5}$, the related benefits are primarily based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009), which is the lower of the two EPA central tendencies. Using the lower value is more conservative when making the policy decision concerning whether a particular standard level is economically justified. If the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2012), the values would be nearly two-and-a-half times larger. (See chapter 14 of the final rule TSD for citations for the studies mentioned above.)

[89] *www.epa.gov/sites/production/files/2014-10/documents/sourceapportionmentbpttsd.pdf.*

electricity generation, DOE primarily relied on the low estimates to be conservative.

DOE multiplied the emissions reduction (in tons) in each year by the associated $/ton values, and then discounted each series using discount rates of 3 percent and 7 percent as appropriate.

DOE received various comments regarding its use of SCC in this rulemaking.

AHRI disputed DOE's assumption that SCC values will increase over time, because AHRI reasons that the more economic development that occurs, the more adaptation and mitigation efforts that will be undertaken. (AHRI, No. 76 at p. 11) In response, the SCC increases over time because future emissions are expected to produce larger incremental damages as physical and economic systems become more stressed in response to greater climatic change (see appendix 14A of the final rule TSD). The approach used by the Interagency Working Group allowed estimation of the growth rate of the SCC directly using the three integrated assessment models (IAMs), which help to ensure that the estimates are internally consistent with other modeling assumptions. Adaptation and mitigation efforts, while necessary and important, are not without cost, particularly if their implementation is delayed.

AHRI, IECA, Spire, and the Cato Institute (Cato) criticized DOE's use of SCC estimates that DOE has acknowledged are subject to considerable uncertainty. (AHRI, No. 76 at p. 9; IECA, No. 63 at p. 3; Spire, No. 73 at p. 21; Cato, No. 62 at pp. 1–27) Cato stated that until the IAMs are made consistent with mainstream climate science, the SCC should be barred from use in this and all other Federal rulemakings. Cato criticized several aspects of the determination of the SCC values by the Interagency Working Group as being discordant with the best climate science and not reflective of climate change impacts. (Cato, No. 62 at pp. 1–2, 4–22) AHRI, IECA, and The Associations also criticized the determination of the SCC values. (AHRI, No.76 at p. 12; IECA, No. 63 at pp. 4–5; The Associations, No. 65 at p. 4)

In conducting the interagency process that developed the SCC values, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. Key uncertainties and model differences transparently and consistently inform the range of SCC estimates. These uncertainties and model differences are discussed in the interagency working group's reports, which are reproduced in appendices 14A and 14B of the final rule TSD, as are the major assumptions. Specifically, uncertainties in the assumptions regarding climate sensitivity, as well as other model inputs such as economic growth and emissions trajectories, are discussed and the reasons for the specific input assumptions chosen are explained. However, the three IAMs used to estimate the SCC are frequently cited in the peer-reviewed literature and were used in the last assessment of the IPCC. In addition, new versions of the models that were used in 2013 to estimate revised SCC values were published in the peer-reviewed literature (see appendix 14B of the final rule TSD for discussion). Although uncertainties remain, the revised estimates that were issued in November 2013 are based on the best available scientific information on the impacts of climate change. The current estimates of the SCC have been developed over many years, using the best science available, and with input from the public. In November 2013, OMB announced a new opportunity for public comment on the interagency technical support document underlying the revised SCC estimates. 78 FR 70586 (Nov. 26, 2013). In July 2015, OMB published a detailed summary and formal response to the many comments that were received. OMB also stated its intention to seek independent expert advice on opportunities to improve the estimates, including many of the approaches suggested by commenters. DOE stands ready to work with OMB and the other members of the Interagency Working Group on further review and revision of the SCC estimates as appropriate.

AHRI, IECA, The Associations, and Cato criticized DOE's use of global rather than domestic SCC values, pointing out that EPCA references weighing of the need for national energy conservation. Cato recommended reporting the results of the domestic SCC calculation in the main body of the proposed regulation. (AHRI, No. 76 at pp. 10–12; IECA, No. 63 at pp. 1–3; The Associations, No. 65 at p. 4; Cato, No. 62 at pp. 2–3)

In response, DOE's analysis estimates both global and domestic benefits of CO_2 emissions reductions. The domestic benefits are reported in chapter 14 of the final rule TSD. Following the recommendation of the Interagency Working Group, DOE places more focus on a global measure of SCC. As discussed in appendix 14A of the final rule TSD, the climate change problem is highly unusual in at least two respects. First, it involves a global externality: emissions of most greenhouse gases contribute to damages around the world even when they are emitted in the United States. Consequently, to address the global nature of the problem, the SCC must incorporate the full (global) damages caused by GHG emissions. Second, climate change presents a problem that the United States alone cannot solve. Even if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change. Other countries would also need to take action to reduce emissions if significant changes in the global climate are to be avoided. Emphasizing the need for a global solution to a global problem, the United States has been actively involved in seeking international agreements to reduce emissions and in encouraging other nations, including emerging major economies, to take significant steps to reduce emissions. When these considerations are taken as a whole, the interagency group concluded that a global measure of the benefits from reducing U.S. emissions is preferable. Therefore, DOE's approach is not in contradiction of the requirement to weigh the need for national energy conservation, as one of the main reasons for national energy conservation is to contribute to efforts to mitigate the effects of global climate change.

IECA commented that the economic models used to determine the SCC did not consider industrial GHG and economic leakage. Furthermore, IECA commented that the higher SCC cost drives manufacturing companies offshore and increases imports of more carbon-intensive manufactured goods, thereby increasing global GHG emissions and that the SCC does not consider this. (IECA, No. 63 at p. 2)

The SCC, as developed in the referenced three models, represents damage assessment and expresses this in terms of dollars per ton of emissions. DOE agrees that the industrial GHG and economic leakage discussed by the commenters is not desirable, but disagrees that it should be part of the SCC calculations. Rather, it reflects the impact of potential offshore production of manufactured goods. The commenter's concern appears to be that the use of the SCC in a regulatory context may increase economic leakage and result in additional carbon emissions not captured in the analysis. DOE understands that this is a possibility, but does not have a tool to confidently assess the amount of production that may move overseas,

where that production may move, and the associated carbon intensity of that production. As such, DOE only recognizes the potential for some reduction in carbon savings from what it has assessed in this rule.

DOE is evaluating appropriate monetization of reduction in other emissions in energy conservation standards rulemakings. DOE has not included monetization of those emissions in the current analysis.

M. Utility Impact Analysis

The utility impact analysis estimates several effects on the electric power generation industry that would result from the adoption of new or amended energy conservation standards. The utility impact analysis estimates the changes in installed electrical capacity and generation that would result for each TSL. The analysis is based on published output from the NEMS associated with *AEO2016*. NEMS produces the *AEO* Reference case, as well as a number of side cases that estimate the economy-wide impacts of changes to energy supply and demand. For the current analysis, impacts are quantified by comparing the levels of electricity sector generation, installed capacity, fuel consumption and emissions consistent with the projections described on page E–8 of *AEO2016* and various side cases. Details of the methodology are provided in the appendices to chapters 13 and 15 of the final rule TSD.

The output of this analysis is a set of time-dependent coefficients that capture the change in electricity generation, primary fuel consumption, installed capacity, and power sector emissions due to a unit reduction in demand for a given end use. These coefficients are multiplied by the stream of electricity savings calculated in the NIA to provide estimates of selected utility impacts of potential new or amended energy conservation standards.

DOE received comments on its utility impact analysis. The Gas Associations commented that DOE only assessed the impacts on the electric power industry in its utility impact analysis, and that Process Rule requires it to ''[estimate] marginal impacts on electric and gas utility costs and revenues.'' (Gas Associations, No. 69 at p. 3)

Historically, DOE's approach to the utility impact analysis, based on NEMS, has been to evaluate the impact of standards only on utility energy sales. NEMS is not suited to characterizing impacts of standards on gas utilities other than those measured by sales, and DOE is unaware of any analytical tools that would enable an analysis of financial impacts on utilities' costs and revenues at a national level. Thus, DOE was not able to perform any further evaluation of the gas utility impacts for the commercial packaged boiler standards rulemaking beyond what is described in this section.

See chapter 15 of the final rule TSD for further details regarding the utility impact analysis.

N. Employment Impact Analysis

DOE considers employment impacts in the domestic economy as one factor in selecting a standard. Employment impacts from new or amended energy conservation standards include both direct and indirect impacts. Direct employment impacts are any changes in the number of employees of manufacturers of the equipment subject to standards, their suppliers, and related service firms; the MIA addresses those impacts. Indirect employment impacts are changes in national employment that occur due to the shift in expenditures and capital investment caused by the purchase and operation of more efficient equipment. Indirect employment impacts from standards consist of the jobs created or eliminated in the national economy, other than in the manufacturing sector being regulated, caused by (1) reduced spending by consumers on energy, (2) reduced spending on new energy supply by the utility industry, (3) increased consumer spending on the purchase of new equipment to which the new standards apply and other goods and services, and (4) the effects of those three factors throughout the economy.

One method for assessing the possible effects on the demand for labor of such shifts in economic activity is to compare sector employment statistics developed by the Labor Department's Bureau of Labor Statistics (BLS).[90] BLS regularly publishes its estimates of the number of jobs per million dollars of economic activity in different sectors of the economy, as well as the jobs created elsewhere in the economy by this same economic activity. Data from BLS indicate that expenditures in the utility sector generally create fewer jobs (both directly and indirectly) than expenditures in other sectors of the economy.[91] There are many reasons for these differences, including wage differences and the fact that the utility sector is more capital-intensive and less labor-intensive than other sectors. Energy conservation standards have the effect of reducing consumer utility bills. Because reduced consumer expenditures for energy likely lead to increased expenditures in other sectors of the economy, the general effect of efficiency standards is to shift economic activity from a less labor-intensive sector (*e.g.,* the utility sector) to more labor-intensive sectors (*e.g.,* the retail and service sectors). Thus, the BLS data suggest that net national employment may increase due to shifts in economic activity resulting from energy conservation standards.

DOE estimated indirect national employment impacts for the standard levels considered in this final rule using an input/output model of the U.S. economy called Impact of Sector Energy Technologies, version 3.1.1 (ImSET).[92] ImSET is a special-purpose version of the ''U.S. Benchmark National Input-Output'' (I–O) model, which was designed to estimate the national employment and income effects of energy-saving technologies. The ImSET software includes a computer-based I–O model having structural coefficients that characterize economic flows among the 187 sectors most relevant to industrial, commercial, and residential building energy use.

DOE notes that ImSET is not a general equilibrium forecasting model and understands the uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Because ImSET does not incorporate price changes, the employment effects predicted by ImSET may over-estimate actual job impacts over the long run. Therefore, DOE used ImSET only to generate results for near-term timeframes (*i.e.,* through 2025), where these uncertainties are reduced.

For more details on the employment impact analysis, see chapter 16 of the final rule TSD.

V. Analytical Results and Conclusions

The following section addresses the results from DOE's analyses with respect to the considered energy conservation standards for commercial packaged boilers. It addresses the TSLs examined by DOE, the projected

[90] Data on industry employment, hours, labor compensation, value of production, and the implicit price deflator for output for these industries are available upon request by calling the Division of Industry Productivity Studies (202–691–5618) or by sending a request by email to *dipsweb@bls.gov*.

[91] See U.S. Department of Commerce—Bureau of Economic Analysis. *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II).* 1997. U.S. Government Printing Office: Washington, DC. Available at *www.bea.gov/scb/pdf/regional/perinc/meth/rims2.pdf.*

[92] J.M. Roop, M.J. Scott, and R.W. Schultz, *ImSET 3.1: Impact of Sector Energy Technologies,* PNNL–18412, Pacific Northwest National Laboratory (2009) (Available at: *www.pnl.gov/main/publications/external/technical_reports/PNNL-18412.pdf*).

impacts of each of these levels if adopted as energy conservation standards for CPB equipment, and the standard levels that DOE is adopting in this final rule. Additional details regarding DOE's analyses are contained in the final rule TSD supporting this document.

A. Trial Standard Levels

DOE analyzed the benefits and burdens of five TSLs for CPB equipment. These TSLs were developed by combining specific efficiency levels for each of the equipment classes analyzed by DOE. DOE presents the results for the TSLs in this document, while the results for all efficiency levels that DOE analyzed are in the final rule TSD.

Table V.1 and Table V.2 present the TSLs analyzed and the corresponding efficiency levels that DOE identified for potential amended energy conservation standards for each equipment class. The efficiency levels in each TSL can be characterized as follows:

- TSL 5 corresponds to the max-tech efficiency level for each equipment class.
- TSL 4 is composed of the efficiency levels corresponding to the maximum NPV at a 7-percent discount rate for each equipment class.
- TSL 3 is composed of a mixture of condensing and non-condensing efficiency levels.
- TSL 2 and TSL 1 are each composed of a mixture of non-condensing efficiency levels only.

A more detailed description of TSLs may be found in appendix 10C of the final rule TSD.

TABLE V.1—TRIAL STANDARD LEVELS FOR COMMERCIAL PACKAGED BOILERS BY EFFICIENCY LEVEL

Equipment class	Trial standard level				
	1	2	3	4	5
	EL	EL	EL	EL	EL
Small Gas-Fired Hot Water Commercial Packaged Boilers	3	3	6	6	7
Large Gas-Fired Hot Water Commercial Packaged Boilers	2	3	3	5	5
Small Oil-Fired Hot Water Commercial Packaged Boilers	4	4	4	6	6
Large Oil-Fired Hot Water Commercial Packaged Boilers	1	2	2	3	4
Small Gas-Fired Steam Commercial Packaged Boilers	3	4	4	5	5
Large Gas-Fired Steam Commercial Packaged Boilers	4	5	5	6	6
Small Oil-Fired Steam Commercial Packaged Boilers	1	2	2	3	3
Large Oil-Fired Steam Commercial Packaged Boilers	1	2	2	3	3

TABLE V.2—TRIAL STANDARD LEVELS FOR COMMERCIAL PACKAGED BOILERS BY THERMAL EFFICIENCY AND COMBUSTION EFFICIENCY

Equipment class	Trial standard level *									
	1		2		3		4		5	
	E_T (%)	E_C (%)	E_T (%)	E_C (%)	E_T (%)	E_C (%)	E_T (%)	E_C (%)	E_T (%)	E_C (%)
Small Gas-Fired Hot Water Commercial Packaged Boilers	84	n/a	84	n/a	95	n/a	95	n/a	99	n/a
Large Gas-Fired Hot Water Commercial Packaged Boilers	n/a	84	n/a	85	n/a	85	n/a	97	n/a	97
Small Oil-Fired Hot Water Commercial Packaged Boilers	87	n/a	87	n/a	87	n/a	97	n/a	97	n/a
Large Oil-Fired Hot Water Commercial Packaged Boilers	n/a	86	n/a	88	n/a	88	n/a	89	n/a	97
Small Gas-Fired Steam Commercial Packaged Boilers	80	n/a	81	n/a	81	n/a	83	n/a	83	n/a
Large Gas-Fired Steam Commercial Packaged Boilers	81	n/a	82	n/a	82	n/a	84	n/a	84	n/a
Small Oil-Fired Steam Commercial Packaged Boilers	83	n/a	84	n/a	84	n/a	86	n/a	86	n/a
Large Oil-Fired Steam Commercial Packaged Boilers	83	n/a	85	n/a	85	n/a	87	n/a	87	n/a

* E_T stands for thermal efficiency, and E_C stands for combustion efficiency.

B. Economic Justification and Energy Savings

1. Economic Impacts on Individual Consumers

DOE analyzed the economic impacts on CPB consumers by looking at the effects potential amended standards at each TSL will have on the LCC and PBP. DOE also examined the impacts of potential standards on selected consumer subgroups. These analyses are discussed below.

a. Life-Cycle Cost and Payback Period

In general, higher-efficiency equipment will affect consumers in two ways: (1) Purchase price increases, and (2) annual operating costs decrease. LCC and PBP include total installed costs (*i.e.,* equipment price plus installation costs), and operating costs (*i.e.,* annual energy use, energy prices, energy price trends, repair costs, and maintenance costs). The LCC calculation also uses equipment lifetime and a discount rate. Chapter 8 of the final rule TSD and section IV.F of this document provide detailed information on the LCC and PBP analysis.

Table V.3 through Table V.18 show the LCC and PBP results for the TSLs considered for each equipment class. In the first of each pair of tables, the simple payback is measured relative to the baseline equipment. In the second table, the impacts are measured relative to the efficiency distribution in the no-new-standards case in the compliance year (see section IV.H.1 of this document). Because some consumers purchase equipment with higher efficiency in the no-new-standards case, the average savings are less than the difference between the average LCC of EL 0 (efficiency level 0) and the average LCC at each TSL. The savings refer only to consumers who are affected by a standard at a given TSL. Those who already purchase equipment with efficiency at or above a given TSL are not affected. Consumers for whom the LCC increases at a given TSL experience a net cost.

TABLE V.3—AVERAGE LCC AND SIMPLE PBP RESULTS BY EFFICIENCY LEVEL FOR SMALL GAS-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$25,050	$10,621	$167,232	$192,282	.....	24.8
	1	25,915	10,512	165,525	191,440	7.9	24.8
	2	26,857	10,406	163,862	190,718	8.4	24.8
1, 2	3	29,302	10,201	160,665	189,967	10.1	24.8
	4	31,505	10,103	159,125	190,630	12.5	24.8
	5	41,440	9,802	155,196	196,636	20.0	24.8
3, 4	6	42,337	9,626	152,449	194,786	17.4	24.8
5	7	45,399	9,297	147,356	192,755	15.4	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment with that efficiency level. The PBP is measured relative to the baseline equipment.

TABLE V.4—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE FOR SMALL GAS-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
	1	$65	3
	2	164	5
1, 2	3	212	14
	4	−208	20
	5	−2,267	28
3, 4	6	−993	35
5	7	945	52

* The savings represent the average LCC for affected consumers.

TABLE V.5—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR LARGE GAS-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Combustion efficiency (E_C) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$96,319	$61,654	$931,329	$1,027,648	.....	24.8
	1	100,141	60,911	920,158	1,020,299	5.1	24.8
1	2	104,306	60,188	909,281	1,013,587	5.4	24.8
2,3	3	111,547	59,483	898,689	1,010,236	7.0	24.8
	4	167,178	56,437	856,643	1,023,821	13.6	24.8
4,5	5	175,096	54,643	829,842	1,004,938	11.2	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.6—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR LARGE GAS-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Combustion efficiency (E_C) Level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
	1	$588	3
1	2	1,307	4
2, 3	3	2,037	6
	4	−1,537	16
4, 5	5	16,952	33

* The savings represent the average LCC for affected consumers.

TABLE V.7—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR SMALL OIL-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$27,204	$26,706	$514,805	$542,009	.....	24.8
	1	28,121	26,406	508,914	537,036	3.1	24.8
	2	29,112	26,114	503,167	532,279	3.2	24.8
	3	30,607	25,828	497,558	528,165	3.9	24.8
1, 2, 3	4	33,009	25,278	486,738	519,747	4.1	24.8
	5	34,355	25,012	481,517	515,873	4.2	24.8
4, 5	6	51,713	23,819	459,234	510,947	8.5	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.8—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR SMALL OIL-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
	1	$1,745	3
	2	4,445	6
	3	7,264	10
1, 2, 3	4	14,421	14
	5	18,127	17
4, 5	6	22,934	42

* The savings represent the average LCC for affected consumers.

TABLE V.9—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR LARGE OIL-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Combustion efficiency (E_C) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$67,485	$92,682	$1,730,005	$1,797,490	.....	24.8
1	1	75,964	90,644	1,691,719	1,767,683	4.2	24.8
2, 3	2	86,757	88,697	1,655,180	1,741,937	4.8	24.8
4	3	93,198	87,756	1,637,533	1,730,731	5.2	24.8
5	4	159,246	85,255	1,590,539	1,749,785	12.4	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.10—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR LARGE OIL-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Combustion efficiency (E_C) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
1	1	$10,193	1
2, 3	2	31,379	7
4	3	41,902	10
5	4	23,643	57

* The savings represent the average LCC for affected consumers.

TABLE V.11—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR SMALL GAS-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$22,734	$10,116	$159,682	$182,416	.....	24.8
	1	23,553	10,020	158,140	181,693	8.5	24.8
	2	24,443	9,926	156,638	181,080	9.0	24.8
1	3	25,408	9,835	155,175	180,584	9.5	24.8
2, 3	4	26,457	9,746	153,751	180,208	10.1	24.8
4, 5	5	28,831	9,574	151,013	179,844	11.3	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.12—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR SMALL GAS-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
	1	$241	17
	2	465	19
1	3	720	27
2, 3	4	1,002	41
4, 5	5	1,341	54

* The savings represent the average LCC for affected consumers.

TABLE V.13—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR LARGE GAS-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$75,672	$51,229	$773,831	$849,504	.....	24.8
	1	77,684	50,623	764,684	842,368	3.3	24.8
	2	79,813	50,032	755,775	835,588	3.5	24.8
	3	82,066	49,456	747,095	829,162	3.6	24.8
1	4	84,452	48,895	738,636	823,088	3.8	24.8
2, 3	5	87,665	48,347	730,390	818,056	4.2	24.8
4, 5	6	93,166	47,292	714,506	807,672	4.4	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.14—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR LARGE GAS-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
	1	$498	1
	2	2,066	4
	3	4,239	6
1	4	7,959	11
2, 3	5	11,188	15
4, 5	6	20,291	21

* The savings represent the average LCC for affected consumers.

TABLE V.15—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR SMALL OIL-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$24,481	$27,361	$519,200	$543,680	.....	24.8
1	1	26,747	26,760	507,521	534,268	3.8	24.8
2, 3	2	28,058	26,471	501,897	529,955	4.0	24.8
4, 5	3	31,580	25,913	491,053	522,633	4.9	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.16—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR SMALL OIL-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
1	1	$2,409	2
2, 3	2	5,839	8
4, 5	3	12,779	14

* The savings represent the average LCC for affected consumers.

TABLE V.17—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR LARGE OIL-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average costs (2015$)				Simple payback period (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	0	$70,522	$108,788	$1,990,314	$2,060,836	.....	24.8
1	1	76,661	106,219	1,943,027	2,019,688	2.4	24.8
2, 3	2	83,859	103,773	1,898,016	1,981,874	2.7	24.8
4, 5	3	92,296	101,441	1,855,125	1,947,421	3.0	24.8

Note: The results for each TSL are calculated assuming that all consumers use equipment at that efficiency level. The PBP is measured relative to the baseline (EL 0) equipment.

TABLE V.18—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS-CASE EFFICIENCY DISTRIBUTION FOR LARGE OIL-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Life-cycle cost savings	
		Average life-cycle cost savings * (2015$)	% of consumers that experience a net cost
0	0	.....	0
1	1	12,563	0
2, 3	2	36,832	1
4, 5	3	70,909	3

* The savings represent the average LCC for affected consumers.

b. Consumer Subgroup Analysis

In the consumer subgroup analysis, DOE estimated the impacts of the considered TSLs on low-income (*i.e.,* multi-family) residential and small business consumers. Given the magnitude of the installation and operating expenditures in question for each equipment class, the LCC savings and corresponding payback periods for low-income residential and small business consumers are generally similar to the impacts for all consumers with, for example, the residential low-income subgroup showing somewhat higher than average benefits and the small business consumers showing slightly lower benefits when compared to the overall CPB consumer population for the SGHW CPB equipment class. DOE estimated the average LCC savings and PBP for the low-income residential subgroup compared with average CPB consumers, as shown in Table V.19 through Table V.26. DOE also estimated LCC savings and PBP for small businesses, and presented the results in Table V.19 through Table V.26. Chapter 11 of the final rule TSD presents the complete LCC and PBP results for the subgroups.

TABLE V.19—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, SMALL GAS-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
	1	$108	$52	$65	5.9	8.2	7.9
	2	272	133	164	6.2	8.6	8.4
1, 2	3	602	101	212	7.5	10.4	10.1
	4	287	−354	−208	9.9	12.7	12.5
	5	−771	−2,610	−2,267	15.9	20.5	20.0
3, 4	6	1,021	−1,526	−993	13.5	17.8	17.4
5	7	4,667	−86	945	11.7	15.8	15.4

TABLE V.20—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, LARGE GAS-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Combustion efficiency (E_C) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
	1	$334	$487	$588	6.9	5.1	5.1
1	2	724	1,077	1,307	7.3	5.4	5.4
2, 3	3	856	1,654	2,037	10.5	7.0	7.0
	4	−4,219	−2,921	−1,537	22.5	13.5	13.6
4, 5	5	6,339	12,524	16,952	17.6	11.2	11.2

TABLE V.21—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, SMALL OIL-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
	1	$2,741	$1,236	$1,745	2.1	3.8	3.1
	2	7,050	3,116	4,445	2.2	4.0	3.2
	3	11,490	5,112	7,264	3.0	4.6	3.9
1, 2, 3	4	23,280	9,984	14,421	3.0	4.9	4.1
	5	29,489	12,451	18,127	3.0	5.1	4.2
4,5	6	47,470	11,101	22,934	5.8	10.5	8.5

TABLE V.22—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, LARGE OIL-FIRED HOT WATER COMMERCIAL PACKAGED BOILERS

TSL	Combustion efficiency (E_C) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
1	1	$24,584	$7,705	$10,193	2.0	4.5	4.2
2, 3	2	79,156	23,115	31,379	2.3	5.3	4.8
4	3	108,008	30,418	41,902	2.5	5.7	5.2
5	4	141,883	3,718	23,643	5.9	13.4	12.4

TABLE V.23—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, SMALL GAS-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
	1	$428	$211	$241	6.0	8.7	8.5
	2	855	403	465	6.3	9.2	9.0
1	3	1,387	608	720	6.7	9.7	9.5
2, 3	4	2,083	812	1,002	7.1	10.3	10.1
4, 5	5	3,461	963	1,341	7.9	11.5	11.3

TABLE V.24—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, LARGE GAS-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
	1	$357	$444	$498	4.0	3.3	3.3
	2	1,449	1,791	2,066	4.2	3.5	3.5
	3	2,938	3,658	4,239	4.4	3.6	3.6
1	4	5,465	6,846	7,959	4.6	3.8	3.8
2, 3	5	6,683	9,504	11,188	5.6	4.2	4.2
4, 5	6	12,975	17,223	20,291	5.8	4.4	4.4

TABLE V.25—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, SMALL OIL-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
1	1	$3,848	$2,039	$2,409	2.5	4.0	3.8
2, 3	2	9,349	4,908	5,839	2.7	4.2	4.0
4, 5	3	20,877	10,572	12,779	3.3	5.1	4.9

TABLE V.26—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND THE NATION, LARGE OIL-FIRED STEAM COMMERCIAL PACKAGED BOILERS

TSL	Thermal efficiency (E_T) level	Average LCC savings (2015$)			Simple payback period (years)		
		Residential low-income	Commercial small business	Nation	Residential low-income	Commercial small business	Nation
1	1	$24,494	$10,960	$12,563	1.2	2.4	2.4
2, 3	2	72,382	31,813	36,832	1.4	2.7	2.7
4, 5	3	141,678	61,065	70,909	1.5	3.0	3.0

c. Rebuttable Presumption Payback

As discussed in section III.E.2 of this document, EPCA establishes a rebuttable presumption that an energy conservation standard is economically justified if the increased purchase cost for equipment that meets the standard is less than three times the value of the first-year energy savings resulting from the standard. In calculating a rebuttable presumption payback period for each of the considered TSLs, DOE used discrete values, and, as required by EPCA, based the energy use calculation on the DOE test procedures for commercial packaged boilers. In contrast, the PBPs presented in section V.B.1 were calculated using distributions that reflect the range of energy use in the field.

Table V.27 presents the rebuttable-presumption PBPs for the considered TSLs. While DOE examined the rebuttable-presumption criterion, it considered whether the standard levels considered for this rule are economically justified through a more detailed analysis of the economic impacts of those levels, pursuant to 42 U.S.C. 6295(o)(2)(B)(i), that considers the full range of impacts to the consumer, manufacturer, Nation, and environment. The results of that analysis serve as the basis for DOE to definitively evaluate the economic justification for a potential standard level, thereby supporting or rebutting the results of any preliminary determination of economic justification. The results of that analysis serve as the basis for DOE to definitively evaluate the economic justification for a potential standard level, thereby supporting or rebutting the results of any preliminary determination of economic justification.

TABLE V.27—REBUTTABLE PRESUMPTION PAYBACK PERIODS FOR COMMERCIAL PACKAGED BOILER EQUIPMENT CLASSES

Equipment class	Rebuttable presumption payback (years)				
	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5
Small Gas-Fired Hot Water Commercial Packaged Boilers	9.2	9.2	15.3	15.3	15.3
Large Gas-Fired Hot Water Commercial Packaged Boilers	4.9	5.9	5.9	10.0	10.0
Small Oil-Fired Hot Water Commercial Packaged Boilers	12.1	12.1	12.1	12.6	24.5
Large Oil-Fired Hot Water Commercial Packaged Boilers	12.0	13.6	13.6	14.6	34.3
Small Gas-Fired Steam Commercial Packaged Boilers	8.5	9.0	9.0	10.1	10.1
Large Gas-Fired Steam Commercial Packaged Boilers	3.4	3.9	3.9	4.1	4.1
Small Oil-Fired Steam Commercial Packaged Boilers	10.5	11.2	11.2	13.9	13.9
Large Oil-Fired Steam Commercial Packaged Boilers	6.5	7.2	7.2	8.0	8.0

2. Economic Impacts on Manufacturers

DOE performed an MIA to estimate the impact of amended energy conservation standards on manufacturers of commercial packaged boilers. The next section describes the expected impacts on manufacturers at each TSL. Chapter 12 of the final rule TSD explains the analysis in further detail.

a. Industry Cash-Flow Analysis Results

In this section, DOE provides GRIM results from the analysis, which examines changes in the industry that would result from a standard. Table V.28 and Table V.29 depict the estimated financial impacts (represented by changes in INPV) of potential amended energy conservation standards on manufacturers of commercial packaged boilers, as well as the conversion costs that DOE expects manufacturers of commercial packaged boilers will incur for all equipment classes at each TSL. As discussed in

section IV.J.2.b, DOE modeled two different markup scenarios using different assumptions that correspond to the range of anticipated market responses to amended energy conservation standards: (1) The preservation of gross margin percentage scenario and (2) the preservation of per-unit operating profit scenario. Each of these scenarios is discussed immediately below.

To assess the less severe end of the range of potential impacts on industry profitability, DOE modeled a preservation of gross margin percentage markup scenario, in which a uniform ''gross margin percentage'' markup is applied across all potential efficiency levels. In this scenario, DOE assumed that a manufacturer's absolute dollar markup will increase as production costs increase in the standards case.

To assess the more severe end of the range of potential impacts on industry profitability, DOE modeled the preservation of operating profit markup scenario, which assumes that manufacturers will not be able to generate greater operating profit on a per-unit basis in the standards case as compared to the no-new-standards case. Rather, as manufacturers make the necessary investments required to convert their facilities to produce new standards-compliant equipment and incur higher costs of goods sold, their percentage markup decreases. Operating profit does not change in absolute dollars and decreases as a percentage of revenue.

Each of the markup scenarios results in a unique set of cash flows and corresponding industry values at each TSL. In the following discussion, the INPV results refer to the difference in industry value between the no-new-standards case and each standards case that result from the sum of discounted cash flows from the reference year (2016) through the end of the analysis period (2049). To provide perspective on the short-run cash flow impact, DOE includes in the discussion of results a comparison of free cash flow between the no-new-standards case and the standards case at each TSL in the year before amended standards would take effect. This figure provides an understanding of the magnitude of required conversion costs relative to cash flows calculated by the industry in the no-new-standards case.

The results in Table V.28 and Table V.29 show potential INPV impacts for CPB manufacturers; Table V.28 reflects the upper bound of impacts and Table V.29 represents the lower bound.

TABLE V.28—MANUFACTURER IMPACT ANALYSIS FOR COMMERCIAL PACKAGED BOILERS—PRESERVATION OF GROSS MARGIN PERCENTAGE MARKUP SCENARIO *

	Units	No-new-standards case	Trial standard level				
			1	2	3	4	5
INPV	2015$ M	277.6	272.4	267.3	252.1	235.3	235.3
Change in INPV	2015$ M	.....	(5.2)	(10.3)	(25.5)	(42.3)	(42.3)
	%	.....	(1.9)	(3.7)	(9.2)	(15.2)	(15.2)
Product Conversion Costs	2015$ M	.....	8.2	13.4	17.7	19.4	19.8
Capital Conversion Costs	2015$ M	.....	5.3	7.8	22.8	35.8	36.5
Total Conversion Costs	2015$ M	.....	13.5	21.2	40.5	55.2	56.4
Free Cash Flow (2019)	2015$ M	19.3	14.2	11.4	3.2	(3.2)	(3.7)
Change in Free Cash Flow	2015$ M	.....	(5.1)	(8.0)	(16.1)	(22.5)	(23.0)
	%	.....	(26.3)	(41.2)	(83.4)	(116.6)	(119.0)

* Parentheses indicate negative values. All values have been rounded to the nearest tenth. M = millions.

TABLE V.29—MANUFACTURER IMPACT ANALYSIS FOR COMMERCIAL PACKAGED BOILERS—PRESERVATION OF OPERATING PROFIT MARKUP SCENARIO *

	Units	No-new-standards case	Trial standard level				
			1	2	3	4	5
INPV	2015$ M	277.6	265.4	259.1	227.6	160.9	159.1
Change in INPV	2015$ M	.....	(12.2)	(18.5)	(50.0)	(116.7)	(118.5)
	%	.....	(4.4)	(6.7)	(18.0)	(42.0)	(42.7)
Product Conversion Costs	2015$ M	.....	8.2	13.4	17.7	19.4	19.8
Capital Conversion Costs	2015$ M	.....	5.3	7.8	22.8	35.8	36.5
Total Conversion Costs	2015$ M	.....	13.5	21.2	40.5	55.2	56.4
Free Cash Flow (2019)	2015$ M	19.3	14.2	11.4	3.2	(3.2)	(3.7)
Change in Free Cash Flow	2015$ M	.....	(5.1)	(8.0)	(16.1)	(22.5)	(23.0)
	%	.....	(26.3)	(41.2)	(83.4)	(116.6)	(119.0)

* Parentheses indicate negative values. All values have been rounded to the nearest tenth. M = millions.

TSL 1 represents EL 3 (84 percent) for small gas-fired hot water boilers, EL 2 (84 percent) for large gas-fired hot water boilers, EL 4 (87 percent) for small oil-fired hot water boilers, EL 1 (86 percent) for large oil-fired hot water boilers, EL 3 (80 percent) for small gas-fired steam boilers, EL 4 (81 percent) for large gas-fired steam boilers, EL 1 (83 percent) for small oil-fired steam boilers, and EL 1 (83 percent) for large oil-fired steam boilers. At TSL 1, DOE estimates

impacts on INPV for CPB manufacturers to range from −4.4 percent to −1.9 percent, or a change in INPV of −$12.2 million to −$5.2 million. At this potential standard level, industry free cash flow will be estimated to decrease by approximately 26.3 percent to $14.2 million, compared to the no-new-standards case value of $19.3 million in 2019, the year before the compliance date. Overall, DOE expects industry to incur product conversion costs of $8.2 million and capital conversion costs of $5.3 million to reach this standard level. At TSL 1, DOE also projects higher unit prices will result in a slight decrease in total shipments in the compliance year (2020). DOE estimates a change in shipments of −0.03 percent relative to the no-new-standards case.

At TSL 1, under the preservation of gross margin percentage markup scenario, the shipment-weighted average price per unit increases by 4.6 percent relative to the no-new-standards case price per unit in the year of compliance (2020). This slight price increase would mitigate a portion of the $13.5 million in conversion costs estimated at TSL 1, resulting in slightly negative INPV impacts under this scenario. Under the preservation of operating profit markup scenario, products at higher efficiency levels command a lower markup to maintain the same operating profit per unit in the no-new-standards case. At TSL 1, this markup scenario results in a weighted average price increase of 4.2 percent. This relatively modest price increase in outweighed by the expected conversion costs and slight decrease in total shipments, resulting in more severe INPV impacts.

TSL 2 sets the efficiency level at EL 3 (84 percent) for small gas-fired hot water boilers, EL 3 (85 percent) for large gas-fired hot water boilers, EL 4 (87 percent) for small oil-fired hot water boilers, EL 2 (88 percent) for large oil-fired hot water, EL 4 (81 percent) for small gas-fired steam boilers, EL 5 (82 percent) for large gas-fired steam boilers, EL 2 (84 percent) for small oil-fired steam boilers, and EL 2 (85 percent) for large oil-fired steam boilers. At TSL 2, DOE estimates impacts on INPV for CPB manufacturers to range from −6.7 percent to −3.7 percent, or a change in INPV of −$18.5 million to −$10.3 million. At this potential standard level, industry free cash flow will be estimated to decrease by approximately 41.2 percent to $11.4 million, compared to the no-new-standards case value of $19.3 million in 2019, the year before the compliance date. Overall, DOE estimates manufactures will incur product conversion costs of $13.4 million and capital conversion costs of $7.8 million at this standard level. At TSL 2, DOE also projects higher unit prices will result in a slight decrease in total shipments in the compliance year (2020). DOE estimates a change in shipments of −0.03 percent relative to the no-new-standards case.

At TSL 2, under the preservation of gross margin percentage markup scenario, the shipment-weighted average price per unit increases by 5.3 percent relative to the no-new-standards case price per unit in the year of compliance (2020). In this scenario, manufacturers are able to fully pass on the increase in MPC to consumers. However, this price increase in outweighed by the $21.2 million in conversion costs estimated at TSL 2, resulting in slightly negative INPV impacts under this scenario. Under the preservation of operating profit markup scenario, the weighted average price per unit increases by 4.9 percent. This price increase is offset by the expected conversion costs and slight decrease in total shipments, resulting in more severe INPV impacts.

TSL 3 represents EL 6 (95 percent) for small gas-fired hot water boilers, EL 3 (85 percent) for large gas-fired hot water boilers, EL 4 (87 percent) for small oil-fired hot water boilers, EL 2 (88 percent) for large oil-fired hot water boilers, EL 4 (81 percent) for small gas-fired steam boilers, EL 5 (82 percent) for large gas-fired steam boilers, EL 2 (84 percent) for small oil-fired steam boilers, and EL 2 (85 percent) for large oil-fired steam boilers. At TSL 3, DOE estimates impacts on INPV for CPB manufacturers to range from −18.0 percent to −9.2 percent, or a change in INPV of −$50.0 million to −$25.5 million. At this potential standard level, industry free cash flow will be estimated to decrease by approximately 83.4 percent in 2019, the year before compliance to $3.2 million compared to the no-new-standards case value of $19.3 million. DOE estimates manufactures will incur product conversion costs of $17.7 million and capital conversion costs of $22.8 million to reach this standard level. At TSL 3, DOE also projects higher unit prices will result in a slight decrease in total shipments in the compliance year (2020). DOE estimates a change in shipments of −0.12 percent relative to the no-new-standards case.

At TSL 3, under the preservation of gross margin percentage markup scenario, the shipment-weighted average price per unit increases by 19.1 percent relative to the no-new-standards case price per unit in the year of compliance (2020). In this scenario, manufacturers are able to fully pass on the increase in MPC to consumers. However, this price increase in outweighed by the $40.5 million in conversion costs estimated at TSL 3, resulting in slightly negative INPV impacts under this scenario. Under the preservation of operating profit markup scenario, the weighted average price per unit increases by 18.0 percent. This price increase is offset by the expected conversion costs and slight decrease in total shipments, resulting in more severe INPV impacts.

TSL 4 represents EL 7 (99 percent) for small gas-fired hot water boilers, EL 5 (97 percent) for large gas-fired hot water boilers, EL 6 (97 percent) for small oil-fired hot water boilers, EL 3 (89 percent) for large oil-fired hot water boilers, EL 5 (83 percent) for small gas-fired steam boilers, EL 6 (84 percent) for large gas-fired steam boilers, EL 3 (86 percent) for small oil-fired steam boilers, and EL 3 (87 percent) for large oil-fired steam boilers. At TSL 4, DOE estimates impacts on INPV for CPB manufacturers to range from −42.0 percent to −15.2 percent, or a change in INPV of −$116.7 million to −$42.3 million. At this potential standard level, industry free cash flow will be estimated to decrease by approximately 116.6 percent in the year before compliance (2019) to −$3.2 million relative to the no-new-standards case value of $19.3 million. DOE estimates that manufacturers will incur product conversion costs of $19.4 million and capital conversion costs of $35.8 million to reach this standard level. At TSL 4, DOE also projects higher unit prices will result in a slight decrease in total shipments in the compliance year (2020). DOE estimates a change in shipments of −0. 24 percent relative to the no-new-standards case.

At TSL 4, under the preservation of gross margin percentage markup scenario, the shipment-weighted average price per unit increases by 39.3 percent relative to the no-new-standards case price per unit in the year of compliance (2020). In this scenario, manufacturers are able to fully pass on the increase in MPC to consumers. However, this price increase in outweighed by the $55.2 million in conversion costs estimated at TSL 4, resulting in slightly negative INPV impacts under this scenario. Under the preservation of operating profit markup scenario, the weighted average price per unit increases by 36.1 percent. This price increase is offset by the expected conversion costs and slight decrease in total shipments, resulting in more severe INPV impacts.

TSL 5 represents EL 7 (99 percent) for small gas-fired hot water boilers, EL 5 (97 percent) for large gas-fired hot water

boilers, EL 6 (97 percent) for small oil-fired hot water boilers, EL 4 (97 percent) for large oil-fired hot water boilers, EL 5 (83 percent) for small gas-fired steam boilers, EL 6 (84 percent) for large gas-fired steam boilers, EL 3 (86 percent) for small oil-fired steam boilers, and EL 3 (87 percent) for large oil-fired steam boilers. TSL 5 represents max-tech for all equipment classes. At TSL 5, DOE estimates impacts on INPV for CPB manufacturers to range from −42.7 percent to −15.2 percent, or a change in INPV of −$118.5 million to −$42.3 million. At this potential standard level, industry free cash flow will be estimated to decrease by approximately 119.0 percent in the year before compliance (2019) to −$3.7 million relative to the no-new-standards case value of $19.3 million. DOE estimates manufacturers will incur product conversion costs of $19.8 million and capital conversion costs of $36.5 million to reach this standard level. At TSL 5, DOE also projects higher unit prices will result in a slight decrease in total shipments in the compliance year (2020). DOE estimates a change in shipments of −0.24 percent relative to the no-new-standards case.

At TSL 5, under the preservation of gross margin percentage markup scenario, the shipment-weighted average price per unit increases by 40.3 percent relative to the no-new-standards case price per unit in the year of compliance (2020). In this scenario, manufacturers are able to fully pass on the increase in MPC to consumers. However, this price increase in outweighed by the $56.4 million in conversion costs estimated at TSL 5, resulting in slightly negative INPV impacts under this scenario. Under the preservation of operating profit markup scenario, the weighted average price per unit increases by 37.0 percent. This price increase is offset by the expected conversion costs and slight decrease in total shipments, resulting in more severe INPV impacts.

b. Impacts on Direct Employment

To quantitatively assess the impacts of amended energy conservation standards on direct employment in the CPB industry, DOE used the GRIM to estimate the domestic labor expenditures and number of direct employees in the no-new-standards case and in each of the standards cases in 2020. In its analysis, DOE assumed that the ratio of production workers to non-production workers remains constant. The sum of domestic production and non-production workers represent total domestic direct employment. DOE used statistical data from the U.S. Census Bureau's 2014 ASM, the results of the engineering analysis, and interviews with manufacturers to determine the inputs necessary to calculate industry-wide labor expenditures and domestic employment levels. Labor expenditures related to manufacturing of the product are a function of the labor intensity of the product, the sales volume, and an assumption that wages remain fixed in real terms over time. The total labor expenditures in each year are calculated by multiplying the MPCs by the labor percentage of MPCs.

The total labor expenditures in the GRIM are converted to domestic production employment levels by dividing production labor expenditures by the annual payment per production worker (production worker hours times the labor rate found in the U.S. Census Bureau's 2014 ASM). The estimates of production workers in this section cover workers, including line-supervisors who are directly involved in fabricating and assembling a unit within the manufacturing facility. Workers performing services that are closely associated with production operations, such as materials handling tasks using forklifts, are also included as production labor.

To calculate non-production workers, the GRIM assumed non-production workers account for 38 percent of total direct employment, which is a ratio derived from 2014 ASM Census data. The total direct employment impacts calculated in the GRIM are the sum of the changes in the number of domestic production and non-production workers resulting from the amended energy conservation standards for CPBs, as compared to the no-new-standards case. In general, more-efficient CPBs are more complex and more labor intensive. Per-unit labor requirements and production time requirements increase with higher energy conservation standards.

DOE estimates that in the absence of amended energy conservation standards, there will be 954 domestic production and non-production workers in the CPB industry in 2020, the year of compliance. DOE estimates that approximately 80 percent of commercial packaged boilers sold in the United States are manufactured domestically. Table V.30 shows the range of the impacts of potential amended energy conservation standards on U.S. production and non-production workers of commercial packaged boilers.

TABLE V.30—POTENTIAL CHANGES IN THE TOTAL NUMBER OF COMMERCIAL PACKAGED BOILERS DIRECT EMPLOYMENT IN 2020

	Trial standard level *					
	No-new-standards case	1	2	3	4	5
Total Number of Domestic Production Workers in 2020 (without changes in production locations).	594	364 to 624	323 to 628	175 to 645	8 to 730	8 to 739.
Potential Changes in Domestic Production Workers in 2020.		(230) to 30	(301) to 4	(453) to 17	(637) to 85	(722) to 9.
Total Number of Domestic Direct Employment in 2020 **.	954	585 to 1,002	518 to 1,009	281 to 1,036	13 to 1,173	13 to 1,187.
Potential Changes in Domestic Direct Employment in 2020.		(369) to 48	(484) to 7	(728) to 27	(1,023) to 137	(1,160) to 14.

* DOE presents a range of potential employment impacts. Numbers in parentheses indicate negative numbers.

** This field presents impacts on total domestic direct employment, which aggregates production and non-production workers. Based on ASM census data, we assumed the ratio of production to non-production employees stays consistent across all analyzed TSLs, which is 38 percent non-production workers.

At the upper end of the range, all examined TSLs show positive impacts on domestic employment levels. Producing more-efficient CPBs tends to require more labor, and DOE estimates that if CPB manufacturers chose to keep their current production in the U.S., domestic employment could increase at each TSL. In interviews, some manufacturers who produce high-efficiency boiler equipment stated that a standard that went to condensing levels could cause them to hire more employees to increase their production capacity.

To establish a lower bound end of production worker employment, DOE assumes no manufacturer chooses to invest in redesign of equipment that does not meet the standard. Production worker employment drops in proportion with the percentage of equipment that is retired. Since this is a lower bound, DOE does not account for additional production labor needed for higher efficiency equipment. During interviews, several manufacturers expressed that they could lose a significant number of employees at TSL 3, TSL 4 and TSL 5, due to the fact that these TSLs contain condensing efficiency levels for the gas-fired hot water boiler equipment classes and oil-fired hot water boiler equipment classes. These manufacturers have employees who work on production lines that produce cast iron sections and carbon steel or copper heat exchangers for lower to mid-efficiency equipment. If amended energy conservation standards were to require condensing efficiency levels, these employees will no longer be needed for that function, and manufacturers will have to decide whether to develop their own condensing heat exchanger production, source heat exchangers from Asia or Europe and assemble higher efficiency equipment, or leave the market entirely.

DOE notes that the employment impacts discussed here are independent of the indirect employment impacts to the broader U.S. economy, which are documented in chapter 15 of the final rule TSD.

c. Impacts on Manufacturing Capacity

In manufacturer interviews, most CPB manufacturers stated that their current production is only running at 50-percent to 75-percent capacity and that any standard that does not propose efficiency levels where manufacturers will use condensing technology for hot water boilers will not have a large effect on capacity. The impacts of a condensing standard on manufacturer capacity are difficult to quantify. Some manufacturers who are already making condensing equipment with a sourced heat exchanger said they will likely be able to increase production using the equipment they already have by utilizing a second shift. Others said a condensing standard will idle a large portion of their business, causing stranded assets and decreased capacity. These manufacturers will have to determine how to best increase their condensing boiler production capacity. DOE believes that some larger domestic manufacturers may choose to add production capacity for a condensing heat exchanger production line.

Manufacturers stated that in a scenario where a potential standard would require efficiency levels at which manufacturers would use condensing technology, there is concern about the level of technical resources required to redesign and test all equipment. The engineering analysis shows that increasingly complex components and control strategies are required as standard levels increase. Manufacturers commented in interviews that the industry would need to add electrical engineering and control systems engineering talent beyond current staffing to meet the redesign requirements of higher TSLs. Additional training might be needed for manufacturing engineers, laboratory technicians, and service personnel if condensing equipment was broadly adopted. However, because TSL 2 (the adopted level) will not require condensing standards, DOE does not expect manufacturers to face long-term capacity constraints due to the standard levels adopted in this final rule.

d. Impacts on Subgroups of Manufacturers

Small manufacturers, niche equipment manufacturers, and manufacturers exhibiting a cost structure substantially different from the industry average could be affected disproportionately. Using average cost assumptions developed for an industry cash-flow estimate is inadequate to assess differential impacts among manufacturer subgroups.

For the CPB industry, DOE identified and evaluated the impact of amended energy conservation standards on one subgroup—small manufacturers. The SBA defines a ''small business'' as having 500 employees or less for NAICS 333414, ''Heating Equipment (except Warm Air Furnaces) Manufacturing.'' Based on this definition, DOE identified 33 manufacturers in the CPB industry that qualify as small businesses. For a discussion of the impacts on the small manufacturer subgroup, see the regulatory flexibility analysis in section VI.B of this document and chapter 12 of the final rule TSD.

e. Cumulative Regulatory Burden

One aspect of assessing manufacturer burden involves looking at the cumulative impact of multiple DOE standards and the regulatory actions of other Federal agencies and States that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon equipment lines or markets with lower expected future returns than competing equipment. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to equipment efficiency.

For the cumulative regulatory burden analysis, DOE looks at other regulations that could affect CPB manufacturers during the compliance period, from 2017 to 2020, or those that take effect within three years of the 2020 compliance date of amended energy conservation standards for this equipment. In interviews, manufacturers cited Federal regulations on equipment other than commercial packaged boilers that contribute to their cumulative regulatory burden. The compliance years and expected industry conversion costs of relevant amended energy conservation standards are indicated in Table V.31. Included in the table are Federal regulations that have compliance dates beyond the six year range of DOE's analysis.

TABLE V.31—COMPLIANCE DATES AND EXPECTED CONVERSION EXPENSES OF FEDERAL ENERGY CONSERVATION STANDARDS AFFECTING COMMERCIAL PACKAGED BOILERS MANUFACTURERS

Federal energy conservation standard	Number of manufacturers *	Number of manufacturers affected from today's rule **	Approx. standards year	Industry conversion costs (millions $)	Industry conversion costs/revenue ***
Commercial Packaged Air Conditioners and Heat Pumps (Air-Cooled) 81 FR 2420 (January 15, 2016).	13	2	2018 and 2023	520.8 (2014$)	4.4%.
Residential Furnace Fans, 79 FR 38129 (July 3, 2014).	38	2	2019	40.6 (2014$)	1.6%.
Commercial Water Heaters † 81 FR 34440 (May 31, 2016).	25	17	2019	29.8 (2014$)	3.0%.
Residential Boilers 81 FR 2320 (January 15, 2016).	36	22	2020	2.5 (2014$)	Less than 1%.
Residential Furnaces † 80 FR 13120 (March 12, 2015).	12	2	2021	55.0 (2013$)	1.0%.
Central Air Conditioners and Heat Pumps § (December 5, 2016).	30	4	2023	342.6 (2015$)	Less than 1%.
Commercial Warm Air Furnaces 81 FR 2420 (January 15, 2016).	14	3	2023	7.5 to 22.2 (2014$) ‡	1.7% to 5.2% ‡.
Residential Water Heaters 75 FR 20112 (April 2016, 2010) +.	39	6	2015	17.5 (2009$)	4.9%.

* This column presents the total number of manufacturers identified in the energy conservation standard rule contributing to cumulative regulatory burden.

** This column presents the number of manufacturers producing CPB equipment that are also listed as manufacturers in the listed energy conservation standard contributing to cumulative regulatory burden.

*** This column presents conversion costs as a percentage of cumulative revenue for the industry during the conversion period. The conversion period is the timeframe over which manufacturers must make conversion costs investments and lasts from the announcement year of the final rule to the standards year of the final rule. This period typically ranges from 3 to 5 years, depending on the energy conservation standard.

† The final rule for this energy conservation standard has not been published. The compliance date and analysis of conversion costs have not been finalized at this time. (If a value is provided for total industry conversion expense, this value represents an estimate from the March 2016 NOPR.)

‡ Low and high conversion cost scenarios were analyzed as part of this Direct Final Rule. The range of estimated conversion expenses presented here reflects those two scenarios.

§ DOE has issued a pre-publication **Federal Register** direct final rule on December 5, 2016. The document can be found at: *http://energy.gov/eere/buildings/downloads/issuance-2016-12-05-energy-conservation-program-energy-conservation-0.*

+ Consistent with Chapter 12 of the TSD, DOE has assessed whether this rule will have significant impacts on manufacturers that are also subject to significant impacts from other EPCA rules with compliance dates within three years of this rule's compliance date. However, DOE recognizes that a manufacturer incurs costs during some period before a compliance date as it prepares to comply, such as by revising product designs and manufacturing processes, testing products, and preparing certifications. As such, to illustrate a broader set of rules that may also create additional burden on manufacturers, DOE has included another rule with compliance dates that fall within six years of the compliance date of this rule by expanding the timeframe of potential cumulative regulatory burden. Note that the inclusion of any given rule in this Table does not indicate that DOE considers the rule to contribute significantly to cumulative impact. DOE has chosen to broaden its list of rules in order to provide additional information about its rulemaking activities.

In addition to the Federal energy conservation standards listed in Table V.31, there are multiple appliance standards that do not have published NOPRs, including residential water heaters and residential pool heaters. DOE also identified other regulatory burdens that will affect manufacturers of commercial packaged boilers:

DOE will continue to evaluate its approach to assessing cumulative regulatory burden for use in future rulemakings to ensure that it is effectively capturing the overlapping impacts of its regulations. DOE plans to seek public comment on the approaches it has used here (*i.e.,* both the 3 and 6 year timeframes from the compliance date) in order to better understand at what point in the compliance cycle manufacturers most experience the effects of cumulative and overlapping burden from the regulation of multiple equipment classes.

DOE Certification, Compliance, and Enforcement (CC&E) Rule

The amended standard that DOE adopted will also impose accompanying CC&E requirements for manufacturers of CPB equipment. DOE conducted a rulemaking to expand AEDM coverage to commercial HVAC, including commercial packaged boilers and issued a final rule on December 31, 2013. (78 FR 79579). An AEDM is a computer modeling or mathematical tool that predicts the performance of non-tested basic models. For this final rule, DOE permits manufacturers of commercial packaged boilers to rate basic models using AEDMs for compliance certification purposes, reducing the need for sample units and reducing burden on manufacturers. The final rule establishes revised verification tolerances CPB manufacturers. More information can be found at *http://energy.gov/eere/buildings/implementation-certification-and-enforcement.*

3. National Impact Analysis

This section presents DOE's estimates of the national energy savings and the NPV of consumer benefits that would result from each of the TSLs considered as potential amended standards.

a. Significance of Energy Savings

To estimate the energy savings attributable to potential amended standards for commercial packaged boilers, DOE compared their energy consumption under the no-new-standards case to their anticipated energy consumption under each TSL. The savings are measured over the entire lifetime of equipment purchased in the 30-year period that begins in the year of anticipated compliance with amended standards (2020–2049). Table V.32 presents DOE's projections of the national energy savings for each TSL

considered for commercial packaged boilers. The savings were calculated using the approach described in section IV.H.2 of this final rule.

TABLE V.32—CUMULATIVE NATIONAL ENERGY SAVINGS FOR COMMERCIAL PACKAGED BOILERS; 30 YEARS OF SHIPMENTS

[2020–2049]

	Trial standard level				
	1	2	3	4	5
	(quads)				
Primary Energy	0.202	0.242	0.721	1.885	1.894
FFC Energy	0.227	0.272	0.803	2.096	2.107

Circular A–4 requires agencies to present analytical results, including separate schedules of the monetized benefits and costs that show the type and timing of benefits and costs.[93] Circular A–4 also directs agencies to consider the variability of key elements underlying the estimates of benefits and costs. For this rulemaking, DOE undertook a sensitivity analysis using 9 years, rather than 30 years, of equipment shipments. The choice of a 9-year period is a proxy for the timeline in EPCA for the review of certain energy conservation standards and potential revision of and compliance with such revised standards.[94] The review timeframe established in EPCA is generally not synchronized with the equipment lifetime, equipment manufacturing cycles, or other factors specific to commercial packaged boilers. Thus, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology. The NES sensitivity analysis results based on a 9-year analytical period are presented in Table V.33. The impacts are counted over the lifetime of equipment purchased in 2020–2028.

TABLE V.33—CUMULATIVE NATIONAL ENERGY SAVINGS FOR COMMERCIAL PACKAGED BOILERS; 9 YEARS OF SHIPMENTS

[2020–2028]

	Trial standard level				
	1	2	3	4	5
	(quads)				
Primary Energy	0.065	0.079	0.218	0.550	0.553
FFC Energy	0.073	0.089	0.243	0.611	0.615

b. Net Present Value of Consumer Costs and Benefits

DOE estimated the cumulative NPV of the total costs and savings for consumers that will result from the TSLs considered for commercial packaged boilers. In accordance with OMB's guidelines on regulatory analysis,[95] DOE calculated NPV using both a 7-percent and a 3-percent real discount rate.

Table V.34 shows the consumer NPV results at 3-percent and 7-percent discount rates respectively for each TSL considered for commercial packaged boilers covered in this rulemaking. In each case, the impacts cover the lifetime of equipment purchased in 2020–2049.

TABLE V.34—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR COMMERCIAL PACKAGED BOILER EQUIPMENT; 30 YEARS OF SHIPMENTS

[2020–2049]

Discount rate	Trial standard level				
	1	2	3	4	5
	(billion 2015$)				
3 percent	1.607	1.977	3.323	9.347	9.361
7 percent	0.451	0.558	0.606	1.997	1.966

[93] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *www.whitehouse.gov/omb/circulars_a004_a-4/.*

[94] EPCA requires DOE to review its standards at least once every 6 years, and requires, for certain equipment, a 3-year period after any new standard is promulgated before compliance is required, except that in no case may any new standards be required within 6 years of the compliance date of the previous standards. (42 U.S.C. 6313(a)(6)(C)) While adding a 6-year review to the 3-year compliance period adds up to 9 years, DOE notes that it may undertake reviews at any time within the 6-year period and that the 3-year compliance date may yield to the 6-year backstop. A 9-year analysis period may not be appropriate given the variability that occurs in the timing of standards reviews and the fact that for some commercial equipment, the compliance period is 5 years rather than 3 years.

[95] Office of Management and Budget. *OMB Circular A–4, Regulatory Analysis.* Section E. 2003. Washington, DC. September 17, 2003. *https://www.whitehouse.gov/omb/circulars_a004_a-4/.*

The NPV results based on the aforementioned 9-year analytical period are presented in Table V.35. The impacts are counted over the lifetime of commercial packaged boilers purchased in 2020–2028. As mentioned previously, such results are presented for informational purposes only and are not indicative of any change in DOE's analytical methodology or decision criteria.

TABLE V.35—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR COMMERCIAL PACKAGED BOILER EQUIPMENT; 9 YEARS OF SHIPMENTS

[2020–2028]

Discount rate	Trial standard level				
	1	2	3	4	5
	(billion 2015$)				
3 percent	0.545	0.675	0.952	2.665	2.663
7 percent	0.204	0.254	0.197	0.705	0.685

c. Indirect Impacts on Employment

DOE expects that amended energy conservation standards for commercial packaged boilers would reduce energy expenditures for consumers of the equipment, with the resulting net savings being redirected to other forms of economic activity. These expected shifts in spending and economic activity could affect the demand for labor. As described in section IV.N of this document, DOE used an input/output model of the U.S. economy to estimate indirect employment impacts of the TSLs that DOE considered in this rulemaking. DOE understands that there are uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Therefore, DOE generated results for near-term timeframes (2020–2025), where these uncertainties are reduced.

The results suggest that the adopted standards are likely to have negligible impact on the net demand for labor in the economy. The net change in jobs is so small that it will be imperceptible in national labor statistics and might be offset by other, unanticipated effects on employment. Chapter 16 of the final rule TSD presents detailed results regarding anticipated indirect employment impacts.

4. Impact on Utility or Performance

As discussed in section III.E.1.d of this final rule, DOE has concluded that the standards adopted in this final rule will not reduce the utility or performance of commercial packaged boilers under consideration in this rulemaking. Manufacturers of the equipment currently offer units that meet or exceed the adopted standards.

5. Impact of Any Lessening of Competition

DOE considered any lessening of competition that would be likely to result from new or amended standards. As discussed in section III.E.1.e, the Attorney General of the United States (Attorney General) determines the impact, if any, of any lessening of competition likely to result from an adopted standard and transmits such determination in writing to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of such impact.

To assist the Attorney General in making this determination, DOE provided the Department of Justice (DOJ) with copies of the 2016 CPB NOPR and the NOPR TSD for review. In its assessment letter responding to DOE, DOJ concluded that the proposed energy conservation standards for commercial packaged boilers are unlikely to have a significant adverse impact on competition. DOE is publishing the Attorney General's assessment at the end of this final rule.

6. Need of the Nation To Conserve Energy

Enhanced energy efficiency, where economically justified, improves the Nation's energy security, strengthens the economy, and reduces the environmental impacts (costs) of energy production. Reduced electricity demand due to energy conservation standards is also likely to reduce the cost of maintaining the reliability of the electricity system, particularly during peak-load periods. As a measure of this reduced demand, chapter 15 in the final rule TSD presents the estimated reduction in generating capacity, relative to the no-new-standards case, for the TSLs that DOE considered in this rulemaking.

Energy conservation resulting from amended standards for commercial packaged boilers is expected to yield environmental benefits in the form of reduced emissions of certain air pollutants and greenhouse gases. Table V.36 provides DOE's estimate of cumulative emissions reductions expected to result from the TSLs considered in this rulemaking. The table includes both power sector emissions and upstream emissions. The emissions were calculated using the multipliers discussed in section IV.K of this document. DOE reports annual emissions reductions for each TSL in chapter 13 of the final rule TSD.

TABLE V.36—CUMULATIVE EMISSIONS REDUCTION FOR COMMERCIAL PACKAGED BOILERS SHIPPED IN 2020–2049

	TSL				
	1	2	3	4	5
Power Sector Emissions					
CO_2 (*million metric tons*)	11.99	14.48	40.01	104.03	104.73
NO_X (*thousand tons*)	10.57	12.77	35.35	91.61	92.24
Hg (*tons*)	0.00	0.00	(0.00)	(0.00)	(0.00)
N_2O (*thousand tons*)	0.10	0.13	0.18	0.44	0.46

TABLE V.36—CUMULATIVE EMISSIONS REDUCTION FOR COMMERCIAL PACKAGED BOILERS SHIPPED IN 2020–2049—Continued

	TSL				
	1	2	3	4	5
CH_4 (*thousand tons*)	0.30	0.37	0.85	2.28	2.30
SO_2 (*thousand tons*)	2.26	2.93	2.54	6.66	7.03
Upstream Emissions					
CO_2 (*million metric tons*)	1.65	2.01	5.32	13.72	13.83
NO_X (*thousand tons*)	23.32	28.11	79.79	206.51	207.85
Hg (*tons*)	0.00	0.00	0.00	0.00	0.00
N_2O (*thousand tons*)	0.01	0.01	0.02	0.04	0.04
CH_4 (*thousand tons*)	118.36	138.58	492.36	1,289.41	1,290.98
SO_2 (*thousand tons*)	0.14	0.19	0.20	0.47	0.49
Total FFC Emissions					
CO_2 (*million metric tons*)	13.65	16.49	45.33	117.75	118.57
NO_X (*thousand tons*)	33.90	40.88	115.15	298.12	300.09
Hg (*tons*)	0.00	0.00	(0.00)	(0.00)	(0.00)
N_2O (*thousand tons*)	0.11	0.14	0.19	0.48	0.49
N_2O (*thousand tons CO_2eq*) *	29.11	37.20	50.61	126.68	130.98
CH_4 (*thousand tons*)	118.66	138.95	493.21	1,291.69	1,293.28
CH_4 (*thousand tons CO_2eq*) *	3,322.44	3,890.66	13,809.78	36,167.26	36,211.79
SO_2 (*thousand tons*)	2.40	3.11	2.74	7.13	7.52

* CO_2eq is the quantity of CO_2 that would have the same global warming potential (GWP).
Note: Parentheses indicate negative values. Negative values refer to an increase in emissions.

As part of the analysis for this final rule, DOE estimated monetary benefits likely to result from the reduced emissions of CO_2 and NO_X estimated for each of the TSLs considered for commercial packaged boilers. As discussed in section IV.L of this document, for CO_2, DOE used the most recent values for the SCC developed by an interagency process. The four sets of SCC values for CO_2 emissions reductions correspond to the average values from a distribution that uses a 5-percent discount rate, the average values from a distribution that uses a 3-percent discount rate, the average values from a distribution that uses a 2.5-percent discount rate, and the 95th-percentile values from a distribution that uses a 3-percent discount rate. For emissions in 2015, the SCC values (expressed in 2015$) are represented by $12.4/t, $40.6/t, $63.2/t, and $118/t, respectively. The values for later years are higher due to increasing damages (public health, economic and environmental) as the projected magnitude of climate change increases.

Table V.37 presents the global value of CO_2 emissions reductions at each TSL. For each of the four cases, DOE calculated a present value of the stream of annual values using the same discount rate as was used in the studies upon which the dollar-per-ton values are based. DOE calculated domestic values as a range from 7 percent to 23 percent of the global values, and these results are presented in chapter 14 of the final rule TSD.

TABLE V.37—ESTIMATE OF GLOBAL PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR COMMERCIAL PACKAGED BOILERS SHIPPED IN 2020–2049

TSL	SCC scenario *			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
Power Sector Emissions				
1	73	350	565	1,066
2	88	424	683	1,289
3	240	1,161	1,874	3,533
4	621	3,010	4,860	9,160
5	625	3,031	4,893	9,223
Upstream Emissions				
1	10	48	78	147
2	12	59	95	179
3	32	154	249	470
4	82	397	641	1,208

TABLE V.37—ESTIMATE OF GLOBAL PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR COMMERCIAL PACKAGED BOILERS SHIPPED IN 2020–2049—Continued

TSL	SCC scenario *			
	5% Discount rate, average	3% Discount rate, average	2.5% Discount rate, average	3% Discount rate, 95th percentile
	(million 2015$)			
5	83	400	646	1,218
Total FFC Emissions				
1	83	399	643	1,213
2	100	482	777	1,468
3	272	1,316	2,123	4,003
4	703	3,407	5,501	10,368
5	708	3,431	5,539	10,441

* For each of the four cases, the corresponding SCC value for emissions in 2015 is $12.4, $40.6, $63.2 and $118 per metric ton (2015$). The values are for CO_2 only (*i.e.,* not CO_2eq of other greenhouse gases).

DOE is well aware that scientific and economic knowledge about the contribution of CO_2 and other GHG emissions to changes in the future global climate and the potential resulting damages to the world economy continues to evolve rapidly. Thus, any value placed on reduced CO_2 emissions in this rulemaking is subject to change. DOE, together with other Federal agencies, will continue to review various methodologies for estimating the monetary value of reductions in CO_2 and other GHG emissions. This ongoing review will consider the comments on this subject that are part of the public record for this and other rulemakings, as well as other methodological assumptions and issues. However, consistent with DOE's legal obligations, and taking into account the uncertainty involved with this particular issue, DOE has included in this final rule the most recent values and analyses resulting from the interagency review process.

DOE also estimated the cumulative monetary value of the economic benefits associated with NO_X emissions reductions anticipated to result from the considered TSLs for commercial packaged boilers. The dollar-per-ton value that DOE used is discussed in section IV.L of this document. Table V.38 presents the cumulative present values for NO_X emissions reductions for each TSL calculated using 7-percent and 3-percent discount rates. This table presents values that use the low dollar-per-ton values, which reflect DOE's primary estimate. Results that reflect the range of NO_X dollar-per-ton values are presented in Table V.40. Detailed discussions on NO_X emissions reductions are available in chapter 14 of the final rule TSD.

TABLE V.38—ESTIMATES OF PRESENT VALUE OF NO_X EMISSIONS REDUCTION FOR COMMERCIAL PACKAGED BOILERS SHIPPED IN 2020–2049

TSL	3% Discount rate	7% Discount rate
	(million 2015$)	
Power Sector Emissions		
1	44	15
2	53	19
3	146	51
4	376	129
5	379	130
Upstream Emissions		
1	37	13
2	45	16
3	126	45
4	325	114
5	327	114
Total FFC Emissions		
1	81	29
2	99	35
3	273	95
4	701	243
5	706	245

7. Other Factors

The Secretary of Energy, in determining whether a standard is economically justified, may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6313(a)(6)(B)(ii)(VII)) No other factors were considered in this analysis.

8. Summary of National Economic Impacts

The NPV of the monetized benefits associated with emissions reductions can be viewed as a complement to the NPV of the consumer savings calculated for each TSL considered in this rulemaking. Table V.39 presents the NPV values that result from adding the estimates of the potential economic benefits resulting from reduced CO_2 and NO_X emissions in each of four valuation scenarios to the NPV of consumer savings calculated for each TSL considered in this rulemaking, at both a 7-percent and 3-percent discount rate. The CO_2 label values used in the columns correspond to the 2015 values in the four sets of SCC values discussed in section IV.L.1 of this document. The dollar-per-ton values that DOE used for NO_X emissions are presented in the final rule TSD chapter 14 of the final rule TSD.

TABLE V.39—COMMERCIAL PACKAGED BOILERS TSLS: NET PRESENT VALUE OF CONSUMER SAVINGS COMBINED WITH NET PRESENT VALUE OF MONETIZED BENEFITS FROM CO_2 AND NO_X EMISSIONS REDUCTIONS

TSL	Consumer NPV at 3% discount rate added with:			
	SCC value of $12.4/t CO_2* and 3% low NO_X value	SCC value of $40.6/t CO_2* and 3% low NO_X value	SCC value of $63.2/t CO_2* and 3% low NO_X value	SCC value of $118/t CO_2* and 3% low NO_X value
	(billion 2015$)			
1	1.772	2.088	2.331	2.902
2	2.176	2.558	2.853	3.543
3	3.867	4.911	5.718	7.599
4	10.751	13.455	15.549	20.416
5	10.776	13.499	15.607	20.509
TSL	Consumer NPV at 7% discount rate added with:			
	SCC value of $12.4/t CO_2* and 7% low NO_X value	SCC value of $40.6/t CO_2* and 7% low NO_X value	SCC value of $63.2/t CO_2* and 7% low NO_X value	SCC value of $118/t CO_2* and 7% low NO_X value
	(billion 2015$)			
1	0.563	0.879	1.123	1.693
2	0.693	1.075	1.370	2.060
3	0.973	2.017	2.824	4.705
4	2.943	5.647	7.741	12.608
5	2.918	5.641	7.749	12.651

* These label values represent the global SCC in 2015, in 2015$. The present values have been calculated with scenario-consistent discount rates.

In considering the results in Table V.39, two issues are relevant. First, the national operating cost savings are domestic U.S. monetary savings that occur as a result of purchasing the covered commercial packaged boilers. The national operating cost savings is measured for the lifetime of units shipped in 2020–2049. The CO_2 reduction is a benefit that accrues globally due to decreased domestic energy consumption that is expected to result from this rule. Because CO_2 emissions have a very long residence time in the atmosphere, the SCC values in future years reflect future climate-related impacts that continue beyond 2100 through 2300.

C. Conclusion

When considering new or amended energy conservation standards for commercial packaged boilers, the standards that DOE adopts must be designed to achieve significant improvement in energy efficiency and be technologically feasible and economically justified. (42 U.S.C. 6313(a)(6)(A)(ii) and (C)(i)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering the seven statutory factors discussed previously. (42 U.S.C. 6313(a)(6)(B)(ii)(I)–(VII) and (C)(i))

For this final rule, DOE considered the impacts of amended standards for commercial packaged boilers at each TSL, beginning with the maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest TSL that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader as DOE discusses the benefits and/or burdens of each TSL, tables in this section present a summary of the results of DOE's quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers who may be disproportionately affected by a national standard and impacts on employment.

1. Benefits and Burdens of Trial Standard Levels Considered for Commercial Packaged Boiler Standards

Table V.40, Table V.41, and Table V.42 summarize the quantitative impacts estimated for each TSL for commercial packaged boilers. The national impacts are measured over the lifetime of commercial packaged boilers

purchased in the 30-year period that begins in the anticipated year of compliance with amended standards (2020–2049). The energy savings, emissions reductions, and value of emissions reductions refer to full-fuel-cycle results. The efficiency levels contained in each TSL are described in section V.A of this final rule.

TABLE V.40—SUMMARY OF ANALYTICAL RESULTS FOR COMMERCIAL PACKAGED BOILER TSLS: NATIONAL IMPACTS

Category	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5
Cumulative FFC National Energy Savings (*quads*)	0.227	0.272	0.803	2.096	2.107.
NPV of Commercial consumer Benefits (billion 2015$)					
3% discount rate	1.607	1.977	3.323	9.347	9.361.
7% discount rate	0.451	0.558	0.606	1.997	1.966.
Cumulative Emissions Reduction (Total FFC Emissions)					
CO_2 (*million metric tons*)	13.65	16.49	45.33	117.75	118.57.
NO_X (*thousand tons*)	33.90	40.88	115.15	298.12	300.09.
Hg (*tons*)	0.000	0.00	0.00	0.00	0.00.
N_2O (*thousand tons*)	0.11	0.14	0.19	0.48	0.49.
N_2O (*thousand tons CO_2eq*)*	29.11	37.20	50.61	126.68	130.98.
CH_4 (*thousand tons*)	118.66	138.95	493.21	1,291.69	1,293.28.
CH_4 (*thousand tons CO_2eq*)*	3,322.44	3,890.66	13,809.78	36,167.26	36,211.79.
SO_2 (*thousand tons*)	2.40	3.11	2.74	7.13	7.52.
Value of Emissions Reduction (Total FFC Emissions)					
CO_2 (*million 2015$*)**	83 to 1,213	100 to 1,468	272 to 4,003	703 to 10,368	708 to 10,441.
NO_X—3% discount rate (*million 2015$*)	81 to 168	99 to 201	273 to 595	701 to 1,535	706 to 1,543.
NO_X—7% discount rate (*million 2015$*)	29 to 66	35 to 80	95 to 215	243 to 549	245 to 553.

Parentheses indicate negative (−) values.
* CO_2eq is the quantity of CO_2 that would have the same global warming potential (GWP).
** Range of the economic value of CO_2 reductions is based on estimates of the global benefit of reduced CO_2 emissions.

TABLE V.41—NPV OF COMMERCIAL CONSUMER BENEFITS BY EQUIPMENT CLASS

Equipment class	Discount rate (%)	Trial standard level				
		1	2	3	4	5
		(billion 2015$)				
Small Gas-Fired Hot Water	3	0.527	0.527	1.873	4.986	4.986
Commercial Packaged Boilers	7	0.114	0.114	0.163	0.898	0.898
Large Gas-Fired Hot Water	3	0.115	0.183	0.183	2.009	2.009
Commercial Packaged Boilers	7	0.032	0.047	0.047	0.491	0.491
Small Oil-Fired Hot Water	3	0.770	0.770	0.770	1.405	1.405
Commercial Packaged Boilers	7	0.242	0.242	0.242	0.324	0.324
Large Oil-Fired Hot Water	3	0.044	0.140	0.140	0.190	0.205
Commercial Packaged Boilers	7	0.014	0.042	0.042	0.056	0.025
Small Gas-Fired Steam	3	0.019	0.040	0.040	0.082	0.082
Commercial Packaged Boilers	7	0.005	0.010	0.010	0.017	0.017
Large Gas-Fired Steam	3	0.027	0.043	0.043	0.084	0.084
Commercial Packaged Boilers	7	0.010	0.015	0.015	0.029	0.029
Small Oil-Fired Steam	3	0.075	0.184	0.184	0.415	0.415
Commercial Packaged Boilers	7	0.024	0.058	0.058	0.125	0.125
Large Oil-Fired Steam	3	0.030	0.089	0.089	0.174	0.174
Commercial Packaged Boilers	7	0.010	0.029	0.029	0.057	0.057
Total—All Classes	3	1.607	1.977	3.323	9.347	9.361
	7	0.451	0.558	0.606	1.997	1.966

* Parentheses indicate negative (−) values.

TABLE V.42—SUMMARY OF ANALYTICAL RESULTS FOR COMMERCIAL PACKAGED BOILER TSLS: MANUFACTURER AND CONSUMER IMPACTS

Category	TSL 1*	TSL 2*	TSL 3*	TSL 4*	TSL 5*
Manufacturer Impacts					
Industry NPV (*million 2015$*) (No-new-standards case INPV = 277.6).	265.4 to 272.4	259.1 to 267.3	227.6 to 252.1	160.9 to 235.3	159.1 to 235.3.
Industry NPV (*% change*)	(4.4) to (1.9)	(6.7) to (3.7)	(18.0) to (9.2)	(42.0) to (15.2)	(42.7) to (15.2).

TABLE V.42—SUMMARY OF ANALYTICAL RESULTS FOR COMMERCIAL PACKAGED BOILER TSLS: MANUFACTURER AND CONSUMER IMPACTS—Continued

Category	TSL 1*	TSL 2*	TSL 3*	TSL 4*	TSL 5*
Consumer Average LCC Savings (2015$)					
Small Gas-Fired Hot Water Commercial Packaged Boilers.	$212	$212	($2,267)	($2,267)	$945.
Large Gas-Fired Hot Water Commercial Packaged Boilers.	$1,307	$2,037	$2,037	$16,952	$16,952.
Small Oil-Fired Hot Water Commercial Packaged Boilers.	$14,421	$14,421	$14,421	$22,934	$22,934.
Large Oil-Fired Hot Water Commercial Packaged Boilers.	$10,193	$31,379	$31,379	$41,902	$23,643.
Small Gas-Fired Steam Commercial Packaged Boilers.	$720	$1,002	$1,002	$1,341	$1,341.
Large Gas-Fired Steam Commercial Packaged Boilers.	$7,959	$11,188	$11,188	$20,291	$20,291.
Small Oil-Fired Steam Commercial Packaged Boilers	$2,409	$5,839	$5,839	$12,779	$12,779.
Large Oil-Fired Steam Commercial Packaged Boilers	$12,563	$36,832	$36,832	$70,909	$70,909.
Consumer Simple PBP (years)					
Small Gas-Fired Hot Water Commercial Packaged Boilers.	10.1	10.1	17.4	17.4	15.4.
Large Gas-Fired Hot Water Commercial Packaged Boilers.	5.4	7.0	7.0	11.2	11.2.
Small Oil-Fired Hot Water Commercial Packaged Boilers.	4.1	4.1	4.1	8.5	8.5.
Large Oil-Fired Hot Water Commercial Packaged Boilers.	4.2	4.8	4.8	5.2	12.4.
Small Gas-Fired Steam Commercial Packaged Boilers.	9.5	10.1	10.1	11.3	11.3.
Large Gas-Fired Steam Commercial Packaged Boilers.	3.8	4.2	4.2	4.4	4.4.
Small Oil-Fired Steam Commercial Packaged Boilers	3.8	4.0	4.0	4.9	4.9.
Large Oil-Fired Steam Commercial Packaged Boilers	2.4	2.7	2.7	3.0	3.0.
% of Consumers that Experience Net Cost					
Small Gas-Fired Hot Water Commercial Packaged Boilers.	14%	14%	35%	35%	52%.
Large Gas-Fired Hot Water Commercial Packaged Boilers.	4%	6%	6%	33%	33%.
Small Oil-Fired Hot Water Commercial Packaged Boilers.	14%	14%	14%	42%	42%.
Large Oil-Fired Hot Water Commercial Packaged Boilers.	1%	7%	7%	10%	57%.
Small Gas-Fired Steam Commercial Packaged Boilers.	27%	41%	41%	54%	54%.
Large Gas-Fired Steam Commercial Packaged Boilers.	11%	15%	15%	21%	21%.
Small Oil-Fired Steam Commercial Packaged Boilers	2%	8%	8%	14%	14%.
Large Oil-Fired Steam Commercial Packaged Boilers	0%	1%	1%	3%	3%.

*Parentheses indicate negative (−) values.

DOE first considered TSL 5, which represents the max-tech level for all the equipment classes and offers the potential for the highest cumulative energy savings through the analysis period from 2020 through 2049. The estimated energy savings from TSL 5 are 2.11 quads of energy. TSL 5 has an estimated NPV of consumer benefit of $1.966 billion using a 7-percent discount rate, and $9.36 billion using a 3-percent discount rate.

The cumulative emissions reductions at TSL 5 are 119 million metric tons of CO_2, 7.52 thousand tons of SO_2, 300 thousand tons of NO_X, 1,293 thousand tons of CH_4, 0.49 thousand ton of N_2O, and an emissions increase of 0.0008 ton of Hg. The estimated monetary value of the CO_2 emissions reductions at TSL 5 ranges from $708 million to $10,441 million.

At TSL 5, the average LCC savings range from $945 to $70,909 depending on equipment class. The fraction of consumers incurring a net cost ranges from 3 percent for the large oil-fired steam CPB equipment class to 57 percent for the large oil-fired hot water CPB equipment class.

At TSL 5, the projected change in INPV ranges from a decrease of $118.5 million to a decrease of $42.3 million, which corresponds to a change in INPV of −42.7 percent to −15.2 percent, respectively. The industry is expected to incur $56.4 million in total conversion costs at this level. Approximately 98.6 percent of industry equipment listings require redesign to meet this standard level today. At this level, manufacturers stated they will require additional engineering expertise and production lines, or possibly source parts from other manufacturers.

Accordingly, the Secretary concludes that at TSL 5 for commercial packaged boilers, the benefits of energy savings, NPV of consumer benefits, emission reductions, and the estimated monetary value of the CO_2 emissions reductions will be outweighed by the negative LCC savings for consumers of small gas-fired hot water commercial packaged boilers, the large number of consumers of small gas-fired hot water commercial packaged boilers, large oil-fired hot water commercial packaged boilers, and small gas-fired steam commercial packaged boilers incurring a net cost, and the large negative change in INPV for manufacturers. Consequently, DOE

has concluded that TSL 5 is not economically justified.

DOE then considered TSL 4, which corresponds to the efficiency level within each equipment class that provides the highest consumer NPV at a 7-percent discount rate over the analysis period from 2020 through 2049. The estimated energy savings from TSL 4 are 2.096 quad of energy. TSL 4 has an estimated NPV of consumer benefit of $2.0 billion using a 7-percent discount rate, and $9.35 billion using a 3-percent discount rate.

The cumulative emissions reductions at TSL 4 are 118 million metric tons of CO_2, 7.1 thousand tons of SO_2, 298 thousand tons of NO_X, 1,292 thousand tons of CH_4, 0.48 thousand ton of N_2O, and an emissions increase of 0.0008 ton of Hg. The estimated monetary value of the CO_2 emissions reductions at TSL 4 ranges from $703 million to $10,368 million.

At TSL 4, the average LCC savings range from −$2,267 to $70,909 depending on equipment class. The fraction of consumers incurring a net cost ranges from 3 percent for the large oil-fired steam CPB equipment class to 54 percent for the small gas-fired steam CPB equipment class.

At TSL 4, the projected change in INPV ranges from a decrease of $116.7 million to a decrease in $42.3 million, which corresponds to a change of −42.0 percent to −15.2 percent, respectively. The industry is expected to incur $55.2 million in total conversion costs at this level. Approximately 88.3 percent of industry equipment listings require redesign to meet this standard level today.

Accordingly, the Secretary concludes that at TSL 4 for commercial packaged boilers, the benefits of energy savings, NPV of consumer benefits, emission reductions, and the estimated monetary value of the CO_2 emissions reductions will be outweighed by the negative LCC savings for consumers of small gas-fired hot water commercial packaged boilers, the large percentage of small gas-fired steam and small gas-fired hot water CPB consumers incurring a net cost, and the reduction in INPV for manufacturers. Consequently, DOE has concluded that TSL 4 is not economically justified.

DOE then considered TSL 3, which corresponds to the intermediate level with both condensing and high efficiency non-condensing standard levels, depending on equipment class, and offers the potential for significant cumulative energy savings over the analysis period from 2020 through 2049. The estimated energy savings from TSL 3 are 0.80 quad of energy. TSL 3 has an estimated NPV of consumer benefit of $0.61 billion using a 7-percent discount rate, and $3.32 billion using a 3-percent discount rate.

The cumulative emissions reductions at TSL 3 are 45 million metric tons of CO_2, 2.74 thousand tons of SO_2, 115 thousand tons of NO_X, 493 thousand tons of CH_4, and 0.19 thousand ton of N_2O, and an emissions increase of 0.0014 ton of Hg. The estimated monetary value of the CO_2 emissions reductions at TSL 3 ranges from $272 million to $4,003 million.

At TSL 3, the average LCC savings range from −$2,267 to $36,832, depending on equipment class. The fraction of consumers incurring a net cost ranges from 1 percent for the large oil-fired steam CPB equipment class to 41 percent for the small gas-fired steam CPB equipment class.

At TSL 3, the projected INPV ranges from a decrease of $50.0 million to a decrease of $25.5 million, which corresponds to a change of −18.0 percent to −9.2 percent, respectively. The industry is expected to incur $40.5 million in total conversion costs at this level. Approximately 70.5 percent of industry equipment listings require redesign to meet this standard level today.

Accordingly, the Secretary concludes that at TSL 3 for commercial packaged boilers, the benefits of energy savings, NPV of consumer benefits, emission reductions, and the estimated monetary value of the CO_2 emissions reductions will be outweighed by the large negative average life-cycle-cost savings (*i.e.,* costs to the consumer) of the small gas-fired hot water CPB equipment class consumers and the large percentage of industry listings requiring redesign to meet this standard level today. Consequently, DOE has concluded that TSL 3 is not economically justified.

TSL 2 corresponds to the intermediate level with only non-condensing standard levels and offers the potential for significant cumulative energy savings over the analysis period from 2020 through 2049. The estimated energy savings from TSL 2 are 0.27 quad of energy. TSL 2 has an estimated NPV of consumer benefit of $0.56 billion using a 7-percent discount rate, and $1.98 billion using a 3-percent discount rate.

The cumulative emissions reductions at TSL 2 are 16 million metric tons of CO_2, 3.1 thousand tons of SO_2, 41 thousand tons of NO_X, 0.0003 ton of Hg, 139 thousand tons of CH_4, and 0.14 thousand ton of N_2O. The estimated monetary value of the CO_2 emissions reductions at TSL 2 ranges from $100 million to $1,468 million.

At TSL 2, the average LCC savings range from $212 to $36,832, depending on equipment class. The fraction of consumers incurring a net cost ranges from 1 percent for the large oil-fired steam CPB equipment class to 41 percent for the small gas-fired steam CPB equipment class.

At TSL 2, the projected INPV ranges from a decrease of $18.5 million to a decrease of $10.3 million, which corresponds to a change of −6.7 percent to −3.7 percent, respectively. The industry is expected to incur $21.2 million in total conversion costs at this level. Approximately 45.7 percent of industry equipment listings require redesign to meet this standard level today.

Accordingly, the Secretary concludes that at TSL 2 for commercial packaged boilers, the benefits of energy savings, NPV of consumer benefits, emission reductions, and the estimated monetary value of the CO_2 emissions reductions will outweigh the negative change in INPV for manufacturers. Consequently, DOE has concluded that TSL 2 is economically justified.

After carefully considering the analysis results and weighing the benefits and burdens of TSL 2, and based on clear and convincing evidence, setting the standards for commercial packaged boilers at TSL 2 represents a significant improvement in energy efficiency that is technologically feasible and economically justified, as defined under EPCA at 42 U.S.C. 6313(a). TSL 2 is technologically feasible because the technologies required to achieve these levels already exist in the current market and are available from multiple manufacturers. TSL 2 is economically justified because the benefits to the Nation in the form of energy savings, consumer NPV at 3-percent and 7-percent discount rates, and emissions reductions outweigh the costs associated with reduced INPV. This is the case for each of the low, primary and high economic cases examined, indicating even under the conservative estimations used in the low economic case the standards are still economically justified. Therefore, DOE adopts amended energy conservation standards for commercial packaged boilers at the levels established by TSL 2 and presented in Table V.43.

TABLE V.43—AMENDED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PACKAGED BOILERS (COMPLIANCE REQUIRED STARTING [DATE THREE YEARS AFTER PUBLICATION OF FINAL RULE])

Equipment	Energy conservation standards	
	Minimum thermal efficiency (%)	Minimum combustion efficiency (%)
Small Gas-Fired Hot Water Commercial Packaged Boilers	84	n/a
Large Gas-Fired Hot Water Commercial Packaged Boilers	n/a	85
Small Oil-Fired Hot Water Commercial Packaged Boilers	87	n/a
Large Oil-Fired Hot Water Commercial Packaged Boilers	n/a	88
Small Gas-Fired Steam Commercial Packaged Boilers	81	n/a
Large Gas-Fired Steam Commercial Packaged Boilers	82	n/a
Small Oil-Fired Steam Commercial Packaged Boilers	84	n/a
Large Oil-Fired Steam Commercial Packaged Boilers	85	n/a

2. Summary of Benefits and Costs (Annualized) of the Adopted Standards

The benefits and costs of the adopted standards can also be expressed in terms of annualized values. The annualized net benefit is the sum of (1) the annualized national economic value (expressed in 2015$) of the benefits from consumer operation of equipment that meets the adopted standards (consisting primarily of operating cost savings from using less energy, minus increases in equipment purchase and installation costs), and (2) the annualized monetary value of the CO_2 and NO_X emission reductions.[96]

Table V.44 shows the annualized values for commercial packaged boilers under TSL 2, expressed in 2015$. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than CO_2 reductions (for which DOE used a 3-percent discount rate along with the average SCC series corresponding to a value of $40.6/t in 2015 (2015$)), the estimated cost of the adopted standards for CPB equipment is $35 million per year in increased equipment costs, while the estimated benefits are $90 million per year in reduced equipment operating costs, $27 million per year in CO_2 reductions, and $3.5 million per year in reduced NO_X emissions. In this case, the net benefit amounts to $85 million per year.

Using a 3-percent discount rate for all benefits and costs and the average SCC series corresponding to a value of $40.6/t in 2015 (in 2015$), the estimated cost of the adopted standards for commercial packaged boilers is $34 million per year in increased equipment costs, while the estimated annual benefits are $144 million in reduced operating costs, $27 million in CO_2 reductions, and $5.5 million in reduced NO_X emissions. In this case, the net benefit would amount to $143 million per year.

TABLE V.44—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS (TSL 2) FOR COMMERCIAL PACKAGED BOILERS *

	Discount rate	Primary estimate	Low net benefits estimate	High net benefits estimate
		(million 2015$/year)		
Benefits				
Consumer Operating Cost Savings *	7%	90	80	98.
	3%	144	128	160.
CO_2 Reduction Monetized Value (using mean SCC at 5% discount rate) * **.	5%	8	7	8.
CO_2 Reduction Monetized Value (using mean SCC at 3% discount rate) * **.	3%	27	24	29.
CO_2 Reduction Monetized Value (using mean SCC at 2.5% discount rate) * **.	2.5%	40	36	43.
CO_2 Reduction Monetized Value (using 95th percentile SCC at 3% discount rate) * **.	3%	82	74	89.
NO_X Reduction Value †	7%	3	3	9.
	3%	5	5	12.
Total Benefits ‡	7% plus CO_2 range	101 to 175	90 to 158	115 to 196.
	7%	120	108	136.
	3% plus CO_2 range	157 to 231	140 to 208	180 to 261.
	3%	177	158	201.

[96] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2016, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (2020, 2030, *etc.*), and then discounted the present value from each year to 2016. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year that yields the same present value.

TABLE V.44—SELECTED CATEGORIES OF ANNUALIZED BENEFITS AND COSTS OF ADOPTED STANDARDS (TSL 2) FOR COMMERCIAL PACKAGED BOILERS *—Continued

	Discount rate	Primary estimate	Low net benefits estimate	High net benefits estimate
		(million 2015$/year)		
Costs				
Consumer Incremental	7%	35	31	37.
Equipment Costs	3%	34	31	37.
Net Benefits				
Total ‡	7% plus CO_2 range	66 to 140	59 to 127	78 to 158.
	7%	85	77	99.
	3% plus CO_2 range	123 to 198	109 to 177	144 to 224.
	3%	143	127	165.

* This table presents the annualized costs and benefits associated with commercial packaged boilers shipped in 2020–2049. These results include benefits to consumers that accrue after 2049 from the equipment purchased in 2020–2049. The incremental installed costs include incremental equipment cost as well as installation costs. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Benefits, and High Benefits Estimates utilize projections of building stock and energy prices from the *AEO2016* No-CPP case, a Low Economic Growth case, and a High Economic Growth case, respectively. In addition, DOE used a constant equipment price assumption as the default price projection; the cost to manufacture a given unit of higher efficiency neither increases nor decreases over time. The equipment price projection is described in section IV.F.1 of this document and chapter 8 of the NOPR technical support document (TSD). In addition, DOE used estimates for equipment efficiency distribution in its analysis based on national data supplied by industry. Purchases of higher efficiency equipment are a result of many different factors unique to each consumer including boiler heating loads, installation costs, site environmental consideration, and others. For each consumer, all other factors being the same, it would be anticipated that higher efficiency purchases in the baseline would correlate positively with higher energy prices. To the extent that this occurs, it would be expected to result in some lowering of the consumer operating cost savings from those calculated in this rule.

** The CO_2 reduction benefits are calculated using 4 different sets of SCC values. The first three use the average SCC calculated using 5-percent, 3-percent, and 2.5-percent discount rates, respectively. The fourth represents the 95th percentile of the SCC distribution calculated using a 3-percent discount rate. The SCC values are emission year specific. See section IV.L.1 for more details.

† DOE estimated the monetized value of NO_X emissions reductions associated with electricity savings using benefit per ton estimates from the *Regulatory Impact Analysis for the Clean Power Plan Final Rule,* published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at *www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.*) See section IV.L.2 for further discussion. For the Primary Estimate and Low Net Benefits Estimate, DOE used national benefit-per-ton estimates for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski *et al.* 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele *et al.* 2011); these are nearly two-and-a-half times larger than those from the ACS study

‡ Total Benefits for both the 3-percent and 7-percent cases are presented using only the average SCC with 3-percent discount rate.

VI. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Section 1(b)(1) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), requires each agency to identify the problem that it intends to address, including, where applicable, the failures of private markets or public institutions that warrant new agency action, as well as to assess the significance of that problem. The problems that this standards address are as follows:

(1) Insufficient information and the high costs of gathering and analyzing relevant information leads some consumers to miss opportunities to make cost-effective investments in energy efficiency.

(2) In some cases the benefits of more efficient equipment are not realized due to misaligned incentives between purchasers and users. An example of such a case is when the equipment purchase decision is made by a building contractor or building owner who does not pay the energy costs.

(3) There are external benefits resulting from improved energy efficiency of commercial packaged boilers that are not captured by the users of such equipment. These benefits include externalities related to public health, environmental protection and national energy security that are not reflected in energy prices, such as reduced emissions of air pollutants and greenhouse gases that impact human health and global warming. DOE attempts to qualify some of the external benefits through use of social cost of carbon values.

The Administrator of the Office of Information and Regulatory Affairs (OIRA) in the OMB has determined that the regulatory action in this document is a significant regulatory action under Executive Order 12866. Accordingly, pursuant to section 6(a)(3)(B) of the Order, DOE has provided to OIRA: (i) The text of the draft regulatory action, together with a reasonably detailed description of the need for the regulatory action and an explanation of how the regulatory action will meet that need; and (ii) An assessment of the potential costs and benefits of the regulatory action, including an explanation of the manner in which the regulatory action is consistent with a statutory mandate. DOE has included these documents in the rulemaking record.

In addition, the Administrator of OIRA has determined that the regulatory action is an ''economically significant regulatory action'' under section (3)(f)(1) of Executive Order 12866. Accordingly, pursuant to section 6(a)(3)(C) of the Order, DOE has provided to OIRA an assessment, including the underlying analysis, of benefits and costs anticipated from the regulatory action, together with, to the extent feasible, a quantification of those costs; and an assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, and an explanation why the planned regulatory action is preferable

to the identified potential alternatives. These assessments can be found in chapter 17 of the technical support document for this rulemaking.[97]

DOE has also reviewed this regulation pursuant to Executive Order 13563. 76 FR 3281 (Jan. 21, 2011). Executive Order 13563 is supplemental to and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in Executive Order 12866. To the extent permitted by law, agencies are required by Executive Order 13563 to: (1) Propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

DOE emphasizes as well that Executive Order 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, the OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, DOE concludes that this final rule is consistent with these principles, including the requirement that, to the extent permitted by law, benefits justify costs.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (IRFA) and a final regulatory flexibility analysis (FRFA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on domestic small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website (*http://energy.gov/gc/office-general-counsel*). DOE published an IRFA in a notice of proposed rule published on March 24, 2016. 81 FR 15836. The Department requested comment on the IRFA and has prepared the following FRFA:

1. Need for, Objectives of, and Legal Basis for, the Rule

A statement of the need for, objectives of, and legal basis for, the rule is stated in section II.A and not repeated here.

2. Significant Issues Raised In Response to the IRFA

As part of the IRFA, DOE requested comment on financial, sales, and market share data from small manufacturers. In response to the request for comment, ABMA stated that it believes that the proposed standards included in the March 2016 NOPR, if adopted, will have an adverse effect on the financial well-being of all boiler manufacturing companies, with a proportionally greater impact on the smaller companies, operating in what is a very competitive marketplace. (ABMA, No. 64 at p. 3) However, ABMA did not provide any additional data regarding the finances, sales, or market share of small manufacturers that would allow DOE to refine its analysis. Lochinvar recommended DOE consult with AHRI on whether or not small manufacturers are accurately covered by its directory or other available sources. (Lochinvar, No. 70 at p. 6) DOE used AHRI's equipment directory and discussions with the manufacturers of the equipment as a resources to compile its small manufacturer list for the IRFA. Additionally, DOE asked all participants at the NOPR public meeting, including AHRI, for additional information on small manufacturers. Raypak noted that the 11 small manufacturers that are not part of AHRI or ABMA comprise 25 percent of the total marketplace. (Raypak, No. 72 at p. 3)

During the NOPR stage DOE used equipment listings from AHRI, information from the ABMA trade association website, company websites, and market research tools to identify small manufacturers. For the final rule analysis, DOE did not rely on AHRI data for the quantitative analysis behind this FRFA. Rather, DOE based its analysis on listings in the Compliance Certification Database,[98] which is the database that houses certified values submitted by manufacturers of covered equipment subject to Federal energy conservation standards. The equipment information in the Compliance Certification Database represents the entire market of covered equipment that is legally sold in the United States.

AHRI commented that utility data on rebate programs would be useful for the Regulatory Impact Analysis (RIA). (AHRI, Public Meeting Transcript, No. 61 at p. 215) PG&E commented that they could provide data on the effectiveness of utility rebate programs. (PG&E, Public Meeting Transcript, No. 61 at p. 215) Raypak noted that rebates on high efficiency boilers might encourage people to use them even in applications where such boilers are not operating at the high efficiency. (Raypak, Public Meeting Transcript, No. 61 at pp. 216–217)

DOE notes that it does consider rebate programs as an alternative to amended standards in its RIA. While it did not receive data on the effectiveness of utility rebates programs, rebates are still considered in this final rule among other alternatives evaluated. More information regarding the RIA may be found in chapter 17 of the final rule TSD. DOE also notes that the method of evaluating the impact of these non-regulatory alternatives considers that certain purchases of high efficiency/condensing boilers may not operate at, or near, their rated efficiencies.

3. Description and Estimate of the Number of Small Entities Affected

a. Methodology for Estimating the Number of Small Entities

For manufacturers of CPB equipment, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. (See 13 CFR part 121.) The size standards are listed by North American Industry Classification System (NAICS) code and industry description and are

[97] See *https://www.regulations.gov/document?D=EERE-2013-BT-STD-0030-0044.*

[98] DOE Compliance Certification Database. *https://www.regulations.doe.gov/certification-data/#q=Product_Group_s%3A*.*

available at *https://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf.* Manufacturing of commercial packaged boilers is classified under NAICS 333414, ''Heating Equipment (except Warm Air Furnaces) Manufacturing.'' The SBA sets a threshold of 500 employees or fewer for an entity to be considered as a small business for this category.

To identify and estimate the total number of companies that could be small business manufacturers of equipment covered by this rulemaking, DOE conducted a market survey using publicly available information to identify potential small manufacturers. DOE's research involved its Compliance Certification Database, the AHRI Directory,[99] individual company and trade association websites, and market research tools (*e.g.,* Hoovers reports) to create a list of companies that manufacture or sell equipment covered by this rulemaking. DOE also asked stakeholders and industry representatives if they were aware of any other small manufacturers during manufacturer interviews and at DOE public meetings. DOE screened out companies that do not offer equipment covered by this rulemaking, do not meet the definition of a ''small business,'' or do not manufacture the covered equipment in the United States.

DOE identified 45 manufacturers of CPBs affected by this rulemaking. Of these, DOE identified 21 as small manufacturers that met the screening requirements.

DOE attempted to contact all the small business manufacturers of CPB equipment it had identified. Five of the 21 identified small businesses agreed to take part in an MIA interview. DOE also obtained information about small business impacts while interviewing large manufacturers.

4. Description and Estimate of Compliance Requirements, Including Differences in Cost, If Any, for Different Groups of Small Entities

The Compliance Certification Database, which provided quantitative data for the basis of this FRFA, contained equipment information for only 8 small manufacturers of CPBs in the market. The equipment distribution in the Compliance Certification Database is representative of the all CPB equipment legally sold in the United States and is the basis for the quantitative analysis of small businesses.

At higher trial standard levels, an increasing number of small manufacturer have no models that are able to meet the evaluated levels. Table VI.1 shows the number of small business manufacturers that have equipment on the market today that could meet the trial standard levels. Table VI.1 illustrates that as the standard level increases, smaller manufacturers, as a group, may have a harder time meeting the energy conservation standard.

TABLE VI.1—NUMBER OF SMALL MANUFACTURERS WITH COMPLIANT MODEL LISTINGS

Standard level	Number of small manufacturers
No-New STD	8
TSL 1	8
TSL 2	8
TSL 3	8
TSL 4	7
TSL 5	2

Additionally, DOE performed a more detail examination of impacts by equipment class. Table VI.2 shows the number of manufacturers in each equipment class able to meet trial standard levels with existing equipment offerings.

TABLE VI.2—NUMBER OF SMALL MANUFACTURERS WITH LISTINGS COMPLIANT AT THE ANALYZED STANDARD LEVELS

Standard level	Number of small business manufacturers with compliant equipment							
	SGHW	LGHW	SOHW	LOHW	SGST	LGST	SOST	LOST
No-New STD	8	4	3	3	4	1	3	2
TSL 1	8	2	1	1	2	1	3	2
TSL 2	8	2	1	1	2	1	3	2
TSL 3	7	2	1	1	2	1	3	2
TSL 4	7	0	0	1	1	0	0	0
TSL 5	0	0	0	1	1	0	0	0

At TSL 5, there are multiple equipment classes where no small manufacturers currently offer equipment that meets the efficiency level. Specifically, no small manufacturers have designs that could meet TSL in the small gas hot water, large gas hot water, small oil hot water, large gas steam, small oil steam, or large oil steam equipment classes. Similarly at TSL 4, small manufacturers do not currently have product offerings meeting the levels for most equipment classes. At TSL 3, TSL 2, and TSL 1, the number of small manufacturers that currently have compliant listings is reduced, but there are small manufacturers with existing equipment offerings meeting the efficiency level for every equipment class analyzed.

To estimate the maximum potential costs to the industry, DOE's conversion cost model assumes manufacturers will choose to redesign all non-compliant models. Manufacturers, including small manufacturers, with no equipment compliant with the amended standard would redesign all models to offer a full suite of equipment. DOE used model counts to disaggregate conversion costs for the small manufacturers in the Compliance Certification Database. Small manufacturers accounted for 21 percent of models. At the adopted standard, small manufacturers in the Compliance Certification Database would have conversion costs totaling $4.5 million. This averages out to $0.56 million in conversion costs per small manufacturer. Using publicly available information from Hoovers, Manta, and Glassdoor, DOE estimated revenues for small manufacturers listed in the Compliance Certification Database. The average annual revenue was $29.6 million. Based on this information, DOE estimated conversion costs to be 0.63 percent of revenue over the three-year conversion period.

For gas-fired commercial packaged boilers, DOE's engineering analysis concludes that no proprietary technology is required to meet today's amended standard level. Manufacturers would likely need to adopt one or a combination of different technology options: (1) Heat exchanger

[99] See *www.ahridirectory.org/ahriDirectory/pages/home.aspx.*

improvements (including upgrading mechanical draft or condensing heat exchangers); (2) improvements in burner technology; or (3) using oxygen trim systems.

DOE notes that the market for oil-fired commercial packaged boilers is shrinking. Some manufacturers, both small and large, may choose not to invest in equipment redesign given the small market size and projected decline in shipments. For manufacturers that do stay in the oil-fired market, DOE's analysis indicates that there are no proprietary technologies required to meet TSL 2. Manufacturers would likely need to adopt one or a combination of different technology options: (1) Heat exchanger improvements (including upgrading to mechanical draft heat exchangers); (2) improvements in burner technology; or (3) using oxygen trim systems.

5. Significant Alternatives to the Rule

The discussion above analyzes impacts on small businesses that would result from the adopted standards. In addition to considering other TSLs in this rulemaking, DOE considered several policy alternatives in lieu of standards that could potentially result in energy savings while reducing burdens on small businesses. DOE considered the following policy alternatives: (1) No change in standard; (2) commercial consumer rebates; (3) commercial consumer tax credits; (4) voluntary energy efficiency targets; and (5) early replacement. While these alternatives may mitigate to some varying extent the economic impacts on small entities compared to the standards, DOE determined that the energy savings of these alternatives are significantly smaller than those that would be expected to result from the adopted standard levels. Accordingly, DOE is declining to adopt any of these alternatives and is adopting the standards set forth in this rulemaking. (See chapter 17 of the final rule TSD for further detail on the policy alternatives DOE considered.)

In reviewing alternatives to the final rule, DOE examined energy conservation standards set at other trial standard levels. At levels above TSL 2, the impacts to small manufacturers would be more severe. While TSL 1 would reduce the impacts on small business manufacturers, it would come at the expense of a reduction in energy savings. DOE concludes that establishing standards at TSL 2 balances the benefits of the energy savings at TSL 2 with the potential burdens placed on commercial packaged boiler manufacturers, including small business manufacturers.

Additional compliance flexibilities may be available through other means. EPCA provides that a manufacturer whose annual gross revenue from all of its operations does not exceed $8 million may apply for an exemption from all or part of an energy conservation standard for a period not longer than 24 months after the effective date of a final rule establishing the standard. Additionally, section 504 of the Department of Energy Organization Act, 42 U.S.C. 7194, provides authority for the Secretary to adjust a rule issued under EPCA in order to prevent ''special hardship, inequity, or unfair distribution of burdens'' that may be imposed on that manufacturer as a result of such rule. Manufacturers should refer to 10 CFR part 430, subpart E, and 10 CFR part 1003 for additional details.

C. Review Under the Paperwork Reduction Act

Manufacturers of commercial packaged boilers must certify to DOE that their equipment comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their equipment according to the DOE test procedures for commercial packaged boilers, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer equipment and commercial equipment, including commercial packaged boilers. 76 FR 12422 (March 7, 2011). The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. DOE requested OMB approval of an extension of this information collection for three years, specifically including the collection of information proposed in the present rulemaking, and estimated that the annual number of burden hours under this extension is 30 hours per company. In response to DOE's request, OMB approved DOE's information collection requirements covered under OMB control number 1910–1400 through November 30, 2017. 80 FR 5099 (January 30, 2015).

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

Pursuant to the National Environmental Policy Act (NEPA) of 1969, DOE has determined that this rule fits within the category of actions included in Categorical Exclusion (CX) B5.1 and otherwise meets the requirements for application of a CX. (See 10 CFR part 1021, App. B, B5.1(b); 1021.410(b) and Appendix B, B(1)–(5).) The rule fits within the category of actions because it is a rulemaking that establishes energy conservation standards for consumer equipment or industrial equipment, and for which none of the exceptions identified in CX B5.1(b) apply. Therefore, DOE has made a CX determination for this rulemaking, and DOE does not need to prepare an Environmental Assessment or Environmental Impact Statement for this rule. DOE's CX determination for this rule is available at *http://energy.gov/nepa/categorical-exclusion-cx-determinations-cx.*

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (Aug. 10, 1999), imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the equipment that is the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in

EPCA. (42 U.S.C. 6297) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, and (3) provide a clear legal standard for affected conduct rather than a general standard and promote simplification and burden reduction. 61 FR 4729 (Feb. 7, 1996). Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at *http://energy.gov/sites/prod/files/gcprod/documents/umra_97.pdf.*

DOE has concluded that this final rule may require expenditures of $100 million or more by the private sector. Such expenditures may include (1) investment in research and development and in capital expenditures by commercial packaged boilers manufacturers in the years between the final rule and the compliance date for the new standards, and (2) incremental additional expenditures by consumers to purchase higher-efficiency commercial packaged boilers, starting at the compliance date for the applicable standard.

Section 202 of UMRA authorizes a Federal agency to respond to the content requirements of UMRA in any other statement or analysis that accompanies the final rule. (2 U.S.C. 1532(c)) The content requirements of section 202(b) of UMRA relevant to a private sector mandate substantially overlap the economic analysis requirements that apply under section 325(o) of EPCA and Executive Order 12866. The **SUPPLEMENTARY INFORMATION** section of the final rule and TSD for this rule respond to those requirements.

Under section 205 of UMRA, the Department is obligated to identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a written statement under section 202 is required. (2 U.S.C. 1535(a)) DOE is required to select from those alternatives the most cost-effective and least burdensome alternative that achieves the objectives of the rule unless DOE publishes an explanation for doing otherwise, or the selection of such an alternative is inconsistent with law. As required by EPCA in 42 U.S.C. 6313(a), this final rule establishes amended energy conservation standards for commercial packaged boilers that are designed to achieve a significant improvement in energy efficiency that DOE has determined to be both technologically feasible and economically justified. A full discussion of the alternatives considered by DOE is presented in chapter 17 of the TSD for this final rule.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (Mar. 15, 1988), that this regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA at OMB, a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgates or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order, and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy, or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on

energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

DOE has concluded that this regulatory action, which sets forth amended energy conservation standards for commercial packaged boilers, is not a significant energy action because the standards are not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on the final rule.

L. Review Under the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (OSTP), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are ''influential scientific information,'' which the Bulletin defines as ''scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions.'' *Id.* 70 FR 2667.

In response to OMB's Bulletin, DOE conducted formal peer reviews of the energy conservation standards development process and the analyses that are typically used and prepared a report describing that peer review.[100] Generation of this report involved a rigorous, formal, and documented evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects. DOJ has determined that the peer-reviewed analytical process continues to reflect current practice, and the Department followed that process for developing energy conservation standards in the case of the present rulemaking.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule prior to its effective date. The report will state that it has been determined that the rule is a ''major rule'' as defined by 5 U.S.C. 804(2).

VII. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subject in 10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation, Test procedures, and Reporting and recordkeeping requirements.

Issued in Washington, DC, on December 28, 2016.

David J. Friedman,

Acting Assistant Secretary, Energy Efficiency and Renewable Energy.

Note: DOE is publishing this document concerning commercial packaged boilers to comply with an order from the U.S. District Court for the Northern District of California in the consolidated cases of *Natural Resources Defense Council, et al.* v. *Perry and People of the State of California et al.* v. *Perry,* Case No. 17–cv–03404–VC, as affirmed by the U.S. Court of Appeals for the Ninth Circuit in the consolidated cases Nos. 18–15380 and 18–15475. DOE reaffirmed the original signature and date in the Energy Conservation Standards implementation of the court order published elsewhere in this issue of the **Federal Register**. This document is substantively identical to the signed document. DOE had previously posted to its website. In response to an error correction request, DOE revised two tables in the document that inadvertently listed the lower bound of several equipment classes as >300,000 Btu/h, instead of ≥300,000 Btu/h. The document has also been edited and formatted in conformance with the publication requirements for the **Federal Register** and CFR to ensure the document can be given legal effect.

Editorial Note: This document was received for publication by the Office of the Federal Register on December 3, 2019.

For the reasons set forth in the preamble, DOE amends part 431 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, to read as set forth below:

PART 431—ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 1. The authority citation for Part 431 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 2. Section 431.87 is revised to read as follows:

§ 431.87 Energy and water conservation standards and their effective dates.

(a) Each commercial packaged boiler listed in Table 1 to § 431.87 and manufactured on or after March 2, 2012 and prior to January 10, 2023, must meet the applicable energy conservation standard levels as follows:

TABLE 1 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATIONS STANDARDS

Equipment	Subcategory	Size category (input)	Efficiency level—effective date: March 2, 2012*
Hot Water Commercial Packaged Boilers	Gas-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h	80.0% E_T.
Hot Water Commercial Packaged Boilers	Gas-fired	>2,500,000 Btu/h	82.0% E_C.
Hot Water Commercial Packaged Boilers	Oil-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h	82.0% E_T.
Hot Water Commercial Packaged Boilers	Oil-fired	>2,500,000 Btu/h	84.0% E_C.
Steam Commercial Packaged Boilers	Gas-fired—all, except natural draft	≥300,000 Btu/h and ≤2,500,000 Btu/h	79.0% E_T.
Steam Commercial Packaged Boilers	Gas-fired—all, except natural draft	>2,500,000 Btu/h	79.0% E_T.
Steam Commercial Packaged Boilers	Gas-fired—natural draft	≥300,000 Btu/h and ≤2,500,000 Btu/h	77.0% E_T.
Steam Commercial Packaged Boilers	Gas-fired—natural draft	>2,500,000 Btu/h	77.0% E_T.
Steam Commercial Packaged Boilers	Oil-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h	81.0% E_T.
Steam Commercial Packaged Boilers	Oil-fired	>2,500,000 Btu/h	81.0% E_T.

*Where E_T means ''thermal efficiency'' and E_C means ''combustion efficiency'' as defined in 10 CFR 431.82.

[100] The 2007 ''Energy Conservation Standards Rulemaking Peer Review Report'' is available at the following website: *http://energy.gov/eere/buildings/downloads/energy-conservation-standards-rulemaking-peer-review-report-0.*

(b) Each commercial packaged boiler listed in Table 2 to § 431.87 and manufactured on or after January 10, 2023, must meet the applicable energy conservation standard levels as follows:

TABLE 2 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATIONS STANDARDS

Equipment	Size category (rated input)	Energy conservation standard
Small Gas-Fired Hot Water Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E_T.
Large Gas-Fired Hot Water Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	85.0% E_C.
Very Large Gas-Fired Hot Water Commercial Packaged Boilers.	>10,000,000 Btu/h	82.0% E_C.
Small Oil-Fired Hot Water Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	87.0% E_T.
Large Oil-Fired Hot Water Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	88.0% E_C.
Very Large Oil-Fired Hot Water Commercial Packaged Boilers.	>10,000,000 Btu/h	84.0% E_C.
Small Gas-Fired Steam Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	81.0% E_T.
Large Gas-Fired Steam Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	82.0% E_T.
Very Large Gas-Fired Steam Commercial Packaged Boilers**.	>10,000,000 Btu/h	79.0% E_T.
Small Oil-Fired Steam Commercial Packaged Boilers	≥300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E_T.
Large Oil-Fired Steam Commercial Packaged Boilers	>2,500,000 Btu/h and ≤10,000,000 Btu/h	85.0% E_T.
Very Large Oil-Fired Steam Commercial Packaged Boilers	>10,000,000 Btu/h	81.0% E_T.

* Where E_T means ''thermal efficiency'' and E_C means ''combustion efficiency'' as defined in 10 CFR 431.82.

** Prior to March 2, 2022, for natural draft very large gas-fired steam commercial packaged boilers, a minimum thermal efficiency level of 77 percent is permitted and meets Federal commercial packaged boiler energy conservation standards.

[FR Doc. 2019–26356 Filed 1–9–20; 8:45 am]

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Part III

Council on Environmental Quality

40 CFR Parts 1500, 1501, 1502, et al.

Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act; Proposed Rule

COUNCIL ON ENVIRONMENTAL QUALITY

40 CFR Parts 1500, 1501, 1502, 1503, 1504, 1505, 1507, and 1508

[CEQ–2019–0003]

RIN 0331–AA03

Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act

AGENCY: Council on Environmental Quality.

ACTION: Notice of proposed rulemaking.

SUMMARY: In this action, the Council on Environmental Quality (CEQ) is proposing to update its regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA). CEQ has not comprehensively updated its regulations since their promulgation in 1978, more than four decades ago. This proposed rule would modernize and clarify the regulations to facilitate more efficient, effective, and timely NEPA reviews by Federal agencies in connection with proposals for agency action. The proposed amendments would advance the original goals of the CEQ regulations to reduce paperwork and delays, and promote better decisions consistent with the national environmental policy set forth in section 101 of NEPA. If finalized, the proposed rule would comprehensively update and substantially revise the 1978 regulations. CEQ invites comments on the proposed revisions.

DATES: CEQ must receive comments by March 10, 2020. CEQ will hold public hearings on the following dates:

1. February 11, 2020, U.S. Environmental Protection Agency Region 8, 1595 Wynkoop Street, Denver, CO.

2. February 25, 2020, U.S. Department of the Interior, Yates Auditorium, 1849 C Street NW, Washington, DC.

All attendees or speakers must register in advance. Details concerning the hearings and information on additional outreach may be found at *www.nepa.gov* and *www.whitehouse.gov/ceq.*

ADDRESSES: You may submit comments, identified by docket number CEQ–2019–0003, by any of the following methods:

- *Federal eRulemaking Portal: https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–456–6546.
- *Mail:* Council on Environmental Quality, 730 Jackson Place NW, Washington, DC 20503.

Instructions: All submissions received must include the agency name and docket number for this rulemaking. All comments received will be posted without change to *https://www.regulations.gov,* including any personal information provided. Do not submit electronically any information you consider to be private, Confidential Business Information (CBI), or other information whose disclosure is restricted by statute.

Docket: For access to the docket to read background documents or comments received, go to *https://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Edward A. Boling, Associate Director for the National Environmental Policy Act, or Viktoria Z. Seale, Chief of Staff and General Counsel, 202–395–5750, *NEPA-Update@ceq.eop.gov.*

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I. Background

The National Environmental Policy Act of 1969, 42 U.S.C. 4321 *et seq.,* (NEPA) was signed into law by President Nixon on January 1, 1970. The Council on Environmental Quality (CEQ) initially issued guidelines for implementing NEPA in 1970, revised those guidelines in 1973, and subsequently promulgated its NEPA implementing regulations in 1978. The original goals of those regulations were to reduce paperwork and delays, and promote better decisions consistent with the national environmental policy established by the Act.

Since their promulgation, however, there has been a need for clarification of the regulations, and CEQ has issued over 30 guidance documents to assist

Federal agencies in complying with NEPA and the CEQ regulations. Courts also have issued numerous decisions addressing appropriate implementation and interpretation of NEPA and the CEQ regulations, resulting in a large body of case law. Additionally, Presidential directives have been issued and legislation has been enacted to reduce delays and expedite the implementation of NEPA and the CEQ regulations, including for certain types of infrastructure projects. Notwithstanding the issuance of guidance, Presidential directives, and legislation, implementation of NEPA and the CEQ regulations can be challenging, and the process can be lengthy, costly, and complex. In some cases, the NEPA process and related litigation has slowed or prevented the development of new infrastructure and other projects that required Federal permits or approvals.

The background section below summarizes NEPA, the CEQ regulations, and developments since CEQ issued those regulations. Specifically, section I.A provides a brief summary of the NEPA statute. Section I.B describes the history of CEQ's regulations implementing NEPA and provides an overview of CEQ's numerous guidance documents and reports issued subsequent to the regulations. Section I.C discusses the role of the courts in interpreting NEPA. Section I.D provides a brief overview of Congress's efforts, and section I.E describes the initiatives of multiple administrations to reduce delays and improve implementation of NEPA. Finally, section I.F provides the background on this rulemaking, including the advance notice of proposed rulemaking (ANPRM).

In section II, CEQ provides a summary of the proposed rule, which, if finalized, would comprehensively update and substantially revise CEQ's current regulations. This proposed rule would modernize and clarify the CEQ regulations to facilitate more efficient, effective, and timely NEPA reviews by Federal agencies by simplifying regulatory requirements, codifying certain guidance and case law relevant to these proposed regulations, revising the regulations to reflect current technologies and agency practices, eliminating obsolete provisions, and improving the format and readability of the regulations. CEQ's proposed revisions include provisions intended to promote timely submission of relevant information to ensure consideration of such information by agencies. CEQ's proposed revisions also are intended to provide greater clarity for Federal agencies, States, Tribes, localities, and the public, and to advance the original goals of the CEQ regulations to reduce paperwork and delays and to promote better decisions consistent with the national environmental policy set forth in section 101 of NEPA.

A. National Environmental Policy Act (NEPA)

Congress enacted NEPA to establish a national policy for the environment, provide for the establishment of CEQ, and for other purposes. Section 101 of NEPA sets forth a national policy ''to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.'' 42 U.S.C. 4331(a). Section 102 of NEPA establishes procedural requirements, applying that national policy to proposals for major Federal actions significantly affecting the quality of the human environment by requiring Federal agencies to prepare a detailed statement on: (1) The environmental impact of the proposed action; (2) any adverse effects that cannot be avoided; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposed action. 42 U.S.C. 4332(2)(C). NEPA also established CEQ as an agency within the Executive Office of the President to administer Federal agency implementation of NEPA. 42 U.S.C. 4342, 4344; *see also Dep't of Transp.* v. *Pub. Citizen,* 541 U.S. 752, 757 (2004).

NEPA does not mandate particular results or substantive outcomes. Rather, NEPA requires Federal agencies to consider environmental impacts of proposed actions as part of agencies' decision-making processes. Additionally, NEPA does not include a private right of action and specifies no remedies. Challenges to agency action alleging non-compliance with NEPA procedures are brought under the Administrative Procedure Act (APA). 5 U.S.C. 551 *et seq.* Accordingly, NEPA cases proceed as APA cases.

B. Council on Environmental Quality (CEQ) Regulations, Guidance, and Reports

1. Regulatory History

In 1970, President Nixon issued Executive Order (E.O.) 11514, titled ''Protection and Enhancement of Environmental Quality,'' which directed CEQ to ''[i]ssue guidelines to Federal agencies for the preparation of detailed statements on proposals for legislation and other Federal actions affecting the environment, as required by section 102(2)(C) of the Act.'' [1] CEQ issued these guidelines in April of 1970 and revised them in 1973.[2]

In 1977, President Carter issued E.O. 11991, titled ''Relating to Protection and Enhancement of Environmental Quality.'' [3] E.O. 11991 amended section 3(h) of E.O. 11514, directing CEQ to ''[i]ssue regulations to Federal agencies for the implementation of the procedural provisions of [NEPA] . . . to make the environmental impact statement process more useful to decision[ ]makers and the public; and to reduce paperwork and the accumulation of extraneous background data, in order to emphasize the need to focus on real environmental issues and alternatives,'' and to ''require [environmental] impact statements to be concise, clear, and to the point, and supported by evidence that agencies have made the necessary environmental analyses.'' E.O. 11991 also amended section 2 of E.O. 11514, requiring agency compliance with the regulations issued by CEQ.

In 1978, CEQ promulgated its ''Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act,'' 40 CFR parts 1500–1508 (''CEQ regulations'' or ''NEPA regulations''), ''[t]o reduce paperwork, to reduce delays, and at the same time to produce better decisions [that] further the national policy to protect and enhance the quality of the human environment.'' [4] The Supreme Court has afforded the CEQ regulations ''substantial deference.'' *Robertson* v. *Methow Valley Citizens Council,* 490 U.S. 332, 374 (1989) (citing *Andrus* v. *Sierra Club,* 442 U.S. 347, 358 (1979)); *see also Pub. Citizen,* 541 U.S. at 757 (''The [CEQ], established by NEPA with authority to issue regulations

[1] 35 FR 4247 (Mar. 7, 1970), § 3(h).

[2] *See* 35 FR 7391 (May 12, 1970) (interim guidelines); 36 FR 7724 (Apr. 23, 1971) (final guidelines); 38 FR 10856 (May 2, 1973) (proposed revisions to guidelines); 38 FR 20550 (Aug. 1, 1973) (revised guidelines).

[3] 42 FR 26967 (May 25, 1977).

[4] 43 FR 55978 (Nov. 29, 1978); *see also* 44 FR 873 (Jan. 3, 1979) (technical corrections), and 43 FR 25230 (June 9, 1978) (proposed rule).

interpreting it, has promulgated regulations to guide [F]ederal agencies in determining what actions are subject to that statutory requirement.'' (citing 40 CFR 1500.3)); *United States* v. *Mead Corp.,* 533 U.S. 218, 227–30 (2001) (properly promulgated agency interpretative regulations addressing ambiguities or gaps in a statute qualify for *Chevron* deference); *Nat'l Cable & Telecomm. Ass'n* v. *Brand X Internet Servs.,* 545 U.S. 967, 980–81 (2005) (applying *Chevron* deference to Federal Communications Commission regulations).

The Supreme Court has held that NEPA is a procedural statute that serves the twin aims of ensuring that agencies consider the significant environmental consequences of their proposed actions and inform the public about their decision making. *Balt. Gas & Elec. Co.* v. *Nat. Res. Def. Council, Inc.,* 462 U.S. 87, 97 (1983) (citing *Vt. Yankee Nuclear Power Corp.* v. *Nat. Res. Def. Council, Inc.,* 435 U.S. 519, 553 (1978); *Weinberger* v. *Catholic Action of Haw./Peace Educ. Project,* 454 U.S. 139, 143 (1981)). Furthermore, in describing the role of NEPA in agencies' decision-making processes, the Supreme Court has stated, ''Congress in enacting NEPA, however, did not require agencies to elevate environmental concerns over other appropriate considerations.'' [5] *Balt. Gas & Elec. Co.,* 462 U.S. at 97 (citing *Strycker's Bay Neighborhood Council* v. *Karlen,* 444 U.S. 223, 227 (1980) (per curiam)). Instead, NEPA requires agencies to analyze the environmental consequences before taking a major Federal action. *Id.* (citing *Kleppe* v. *Sierra Club,* 427 U.S. 390, 410 n.21 (1976)). The Supreme Court has recognized that agencies have limited time and resources and that ''[t]he scope of the agency's inquiries must remain manageable if NEPA's goal of '[insuring] a fully informed and well-considered decision,' . . . is to be accomplished.'' *Metro. Edison Co.* v. *People Against Nuclear Energy,* 460 U.S. 766, 776 (1983) (quoting *Vt. Yankee,* 435 U.S. at 558).

CEQ has substantively amended its NEPA regulations only once, at 40 CFR 1502.22, to replace the ''worst case'' analysis requirement with a provision for the consideration of incomplete or unavailable information regarding reasonably foreseeable significant adverse effects.[6] CEQ found that the new 40 CFR 1502.22 ''will generate information and discussion on those consequences of greatest concern to the public and of greatest relevance to the agency's decision,'' [7] rather than distorting the decision-making process by overemphasizing highly speculative harms.[8] The Supreme Court found this reasoning to be a well-considered basis for the change, and that the new regulation was entitled to substantial deference. *Methow Valley,* 490 U.S. at 356.

The CEQ regulations direct Federal agencies to adopt their own implementing procedures to supplement the NEPA regulations. 40 CFR 1507.3. Under this regulation, agencies across the Federal Government have developed such procedures.[9]

2. CEQ Guidance and Reports

Over the past four decades, numerous questions have been raised regarding appropriate implementation of NEPA and the CEQ regulations. Soon after the issuance of the CEQ regulations and in response to CEQ's review of NEPA implementation and feedback from Federal, State, and local officials, including NEPA practitioners, CEQ issued the ''Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations'' [10] in 1981 (''Forty Questions''). This guidance covered a wide range of topics including alternatives, coordination among applicants, lead and cooperating agencies, and integration of NEPA documents with analysis for other environmental statutes. In addition, CEQ has periodically examined the effectiveness of the NEPA process and issued a number of reports on NEPA implementation. In some instances, these reports led to additional guidance. These documents have been intended to provide guidance and clarifications with respect to various aspects of the implementation of NEPA and the definitions in the CEQ regulations, and to increase the efficiency and effectiveness of the environmental review process.[11]

In January 1997, CEQ issued ''The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years.'' [12] In that report, CEQ acknowledged that NEPA has ensured that agencies adequately analyze the potential environmental consequences of their actions and bring the public into the decision-making processes of Federal agencies. However, CEQ also identified matters of concern to participants in the study, including concerns with overly lengthy documents that may not enhance or improve decision making,[13] and concerns that agencies may seek to '' 'litigation-proof' documents, increasing costs and time but not necessarily quality.'' [14] The report further stated that ''[o]ther matters of concern to participants in the Study were the length of NEPA processes, the extensive detail of NEPA analyses, and the sometimes confusing overlay of other laws and regulations.'' [15] The participants in the study identified five elements of the NEPA process' collaborative framework (strategic planning, public information and input, interagency coordination, interdisciplinary place-based decision making, and science-based flexible management) as critical to effective and efficient NEPA implementation.

In 2002, the Chairman of CEQ established a NEPA task force, composed of Federal agency officials, to examine NEPA implementation by focusing on (1) technology and information management and security; (2) Federal and intergovernmental collaboration; (3) programmatic analyses and tiering; (4) adaptive management and monitoring; (5) categorical exclusions (CEs); and (6) environmental assessments (EAs). In 2003, the task force issued a report [16] recommending actions to improve and modernize the

[5] Section 101 of NEPA provides that it is the Federal Government's policy ''to use all practicable means and measures . . . to create and maintain conditions under which man and natures can exist in productive harmony, and *fulfill the social, economic, and other requirements of present and future generations of Americans.*'' 42 U.S.C. 4331(a) (emphasis added).

[6] 51 FR 15618 (Apr. 25, 1986).

[7] 50 FR 32234, 32237 (Aug. 9, 1985).

[8] 51 FR 15618, 15620 (Apr. 25, 1986).

[9] A list of agency NEPA procedures is available at *https://ceq.doe.gov/laws-regulations/agency_implementing_procedures.html.*

[10] 46 FR 18026 (Mar. 23, 1981), *https://www.energy.gov/nepa/downloads/forty-most-asked-questions-concerning-ceqs-national-environmental-policy-act.*

[11] *See https://ceq.doe.gov/guidance/guidance.html.*

[12] *https://ceq.doe.gov/docs/ceq-publications/nepa25fn.pdf.*

[13] *Id.* at iii.

[14] *Id.*

[15] *Id.* In the 50 years since the passage of NEPA, Congress has amended or enacted a number of other environmental laws that may also apply to proposed Federal agency actions, such as the Endangered Species Act, the Clean Water Act, the Clean Air Act, and other substantive statutes. *See* discussion *infra* section I.D. Consistent with 40 CFR 1502.25, longstanding agency practice has been to use the NEPA process as the umbrella procedural statute, integrating compliance with these laws into the NEPA review and discussing them in the NEPA document. However, this practice sometimes leads to confusion as to whether analysis is done to comply with NEPA or another, potentially substantive, environmental law.

[16] *See* The NEPA Task Force Report to the Council on Environmental Quality, Modernizing NEPA Implementation (Sept. 2003) (''NEPA Task Force Report''), *https://ceq.doe.gov/docs/ceq-publications/report/finalreport.pdf.*

NEPA process, leading to additional guidance documents and handbooks.

Over the past 4 decades, CEQ has issued over 30 documents to provide guidance and clarifications to assist Federal agencies to more efficiently and effectively implement NEPA. CEQ has issued guidance on such topics as CEs,[17] EAs, mitigation, and findings of no significant impact (FONSIs),[18] emergencies,[19] programmatic NEPA reviews,[20] timely environmental reviews,[21] collaboration and conflict resolution,[22] purpose and need,[23] effects,[24] lead and cooperating agencies, environmental justice,[25] and other topics.[26]

Despite CEQ guidance and regulations providing for concise, timely documents, the documentation and timelines for completing environmental reviews can be very lengthy, and the process can be complex and costly. In 2018, CEQ and the Office of Management and Budget (OMB) issued a memorandum titled ''One Federal Decision Framework for the Environmental Review and Authorization Process for Major Infrastructure Projects under E.O. 13807'' (''OFD Framework Guidance'').[27] CEQ and OMB issued this guidance pursuant to E.O. 13807, titled ''Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects,''[28] to improve agency coordination for infrastructure projects requiring an environmental impact statement (EIS) and permits or other authorizations from multiple agencies and to improve the timeliness of the environmental review process. *See* E.O. 13807, *infra* I.D. Consistent with the OFD Framework Guidance, *supra* note 27, Federal agencies signed a memorandum of understanding committing to implement the One Federal Decision (OFD) policy for major infrastructure projects, including by committing to establishing a joint schedule for such projects, preparation of a single EIS and joint record of decision (ROD), elevation of delays and dispute resolution, and setting a goal of completing environmental reviews for such projects within 2 years.[29] Subsequently, CEQ and OMB issued guidance for the Secretary of Transportation regarding the applicability of the OFD policy to States under the Surface Transportation Project Delivery Program,[30] and for the Secretary of Housing and Urban Development (HUD) regarding the applicability of the OFD policy to entities assuming HUD environmental review responsibilities.[31]

3. Environmental Impact Statement (EIS) Timelines and Page Count Reports

CEQ also has conducted reviews and prepared reports on the length of time it takes for agencies to prepare EISs and the length of these documents. These reviews found that the process for preparing EISs is taking much longer than CEQ advised, and that the documents are far longer than the CEQ regulations and guidance recommended. In December 2018, CEQ issued a report compiling information relating to the timelines for preparing EISs during the period of 2010–2017. While CEQ's Forty Questions states that the time for an EIS, even for a complex project, should not exceed 1 year,[32] CEQ found that, across the Federal Government, the average time for completion of an EIS and issuance of a ROD was over 4.5 years and the median was 3.6 years.[33] One quarter of the EISs took less than 2.2 years, and one quarter of the EISs took more than 6 years.

As reflected in that report, the period from publication of a notice of intent (NOI) to prepare an EIS to the notice of availability of the draft EIS took, on average, 58 percent of the total time, while preparing the final EIS, including addressing comments received on the draft EIS, took, on average, 32 percent of the total time. The period from the final EIS to publication of the ROD took, on average, 10 percent of the total time. This report recognized that EIS timelines vary widely, and many factors may influence the timing of the document, including variations in the scope and complexity of the actions, variations in the extent of work done prior to issuance of the NOI, and suspension of EIS activities due to external factors.

Additionally, in July 2019, CEQ issued a report on the length, by page

[17] *See* Council on Environmental Quality, Final Guidance for Federal Departments and Agencies on Establishing, Applying, and Revising Categorical Exclusions under the National Environmental Policy Act, 75 FR 75628 (Dec. 6, 2010) (''CE Guidance''), *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/NEPA_CE_Guidance_Nov232010.pdf* (clarifies the rules for establishing, applying, and revising CEs, including methods for substantiating CEs and the process to establish new CEs in agency NEPA procedures).

[18] *See* Final Guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation and Monitoring and Clarifying Appropriate Use of Mitigated Findings of No Significant Impact, 76 FR 3843 (Jan. 21, 2011) (''Mitigation Guidance''), *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf* (explains the requirements of NEPA and the NEPA regulations on establishing, implementing, and monitoring mitigation commitments identified and analyzed in EAs, environmental impact statements (EISs), and adopted in decision documents).

[19] *See* Emergencies and the National Environmental Policy Act (''Emergencies Guidance''), *https://ceq.doe.gov/docs/nepa-practice/Emergencies_and_NEPA.pdf.*

[20] *See* Effective Use of Programmatic NEPA Reviews (Dec. 18, 2014) (''Programmatics Guidance''), *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Effective_Use_of_Programmatic_NEPA_Reviews_Final_Dec2014_searchable.pdf.*

[21] *See* Final Guidance on Improving the Process for Preparing Efficient and Timely Environmental Reviews Under the National Environmental Policy Act, 77 FR 14473 (Mar. 12, 2012) (''Timely Environmental Reviews Guidance''), *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Improving_NEPA_Efficiencies_06Mar2012.pdf* (clarifies and emphasizes tools in the NEPA regulations for preparing efficient and timely environmental reviews for both EAs and EISs).

[22] *See* Memorandum on Environmental Conflict Resolution (Nov. 28, 2005), as expanded by Memorandum on Environmental Collaboration and Conflict Resolution (Sept. 7, 2012), *https://ceq.doe.gov/nepa-practice/environmental-collaboration-and-conflict-resolution.html* (supports constructive and timely approaches to resolve conflicts over the use, conservation, and restoration of the environment, natural resources, and public lands, including under NEPA).

[23] *See* Letter from the Hon. James L. Connaughton, Chairman, Council on Environmental Quality, to the Hon. Norman Y. Mineta, Secretary, Department of Transportation (May 12, 2003) (''Connaughton Letter''), *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/CEQ–DOT_PurposeNeed_May-2013.pdf.*

[24] *See* Considering Cumulative Effects Under the National Environmental Policy Act (Jan. 1997), *https://ceq.doe.gov/publications/cumulative_effects.html.*

[25] *See* Environmental Justice: Guidance under the National Environmental Policy Act (Dec. 10, 1997), *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/regs/ej/justice.pdf.*

[26] *See, e.g.,* Forty Questions, *supra* note 10; NEPA and NHPA: Handbook for Integrating NEPA and Section 106 Reviews, *https://ceq.doe.gov/publications/nepa-handbooks.html* (clarifies and emphasizes tools in the NEPA regulations for preparing efficient and timely environmental reviews for both EAs and EISs); A Citizen's Guide to the NEPA: Having Your Voice Heard, *https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html.*

[27] M–18–13 (Mar. 20, 2018), *https://www.whitehouse.gov/wp-content/uploads/2018/04/M-18-13.pdf.*

[28] 82 FR 40463 (Aug. 24, 2017).

[29] *See* Memorandum of Understanding Implementing One Federal Decision under Executive Order 13807 (2018), *https://www.whitehouse.gov/wp-content/uploads/2018/04/MOU-One-Federal-Decision-m-18–13-Part-2–1.pdf.*

[30] Guidance on the Applicability of E.O. 13807 to States with NEPA Assignment Authority Under the Surface Transportation Project Delivery Program (Feb. 26, 2019), *https://www.whitehouse.gov/wp-content/uploads/2017/11/20190226OMB-CEQ327.pdf.*

[31] Guidance on the Applicability of E.O. 13807 to Responsible Entities Assuming Department of Housing and Urban Development Environmental Review Responsibilities, M–19–20 (June 28, 2019), *https://www.whitehouse.gov/wp-content/uploads/2019/06/M–19–20.pdf.*

[32] Question 35, Forty Questions, *supra* note 10.

[33] *See* Council on Environmental Quality, Environmental Impact Statement Timelines (2010–2017), (Dec. 14, 2018), *https://ceq.doe.gov/nepa-practice/eis-timelines.html.*

count, of EISs (excluding appendices) finalized during the period of 2013–2017. While the CEQ regulations include recommended page limits for the text of final EISs of normally less than 150 pages, or normally less than 300 pages for proposals of ''unusual scope or complexity,'' 40 CFR 1502.7, CEQ found that many EISs are significantly longer. In particular, CEQ found that across all Federal agencies, draft EISs averaged 586 pages in total, with a median document length of 403 pages.[34] One quarter of the draft EISs were 288 pages or shorter, and one quarter were 630 pages or longer. For final EISs, the mean document length was 669 pages, and the median document length was 445 pages. One quarter of the final EISs were 299 pages or shorter, and one quarter were 729 pages or longer. On average, the change in document length from draft EIS to final EIS was an additional 83 pages or a 14 percent increase.

With respect to final EISs, CEQ found that approximately 7 percent were 150 pages or shorter, and 25 percent were 300 pages or shorter. Similar to the conclusions of its EIS timelines study, CEQ noted that a number of factors may influence the length of EISs, including variation in scope and complexity of the decisions that the EIS is designed to inform, the degree to which NEPA documentation is used to document compliance with other statutes, and considerations relating to potential legal challenges. Moreover, variation in EIS length may reflect differences in management, oversight, and contracting practices among agencies that could result in longer documents.

While there can be many factors affecting the timelines and length of EISs, CEQ has concluded that revisions to the CEQ regulations to advance more timely reviews and reduce unnecessary paperwork are warranted. CEQ has determined that improvements to agency processes, such as improved coordination in the development of EISs, can achieve more useful and timely documents to support agency decision making.

C. Judicial Review of Agency NEPA Compliance

Over the past 50 years, Federal courts have issued an extensive body of case law interpreting NEPA and the CEQ regulations. The Supreme Court has directly addressed NEPA in 17 decisions, and the U.S. district and appellate courts issue approximately 100 to 140 decisions each year interpreting NEPA. The Supreme Court has construed NEPA and the CEQ regulations in light of a ''rule of reason,'' which ensures that agencies determine whether and to what extent to prepare an EIS based on the usefulness of information to the decision-making process. *See Marsh* v. *Or. Nat. Res. Council,* 490 U.S. 360, 373–74 (1989). ''Although [NEPA] procedures are almost certain to affect the agency's substantive decision, it is now well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process.'' *Methow Valley,* 490 U.S. at 350; *Pub. Citizen,* 541 U.S. at 756–57 (''NEPA imposes only procedural requirements on [F]ederal agencies with a particular focus on requiring agencies to undertake analyses of the environmental impact of their proposals and actions.'' (citing *Methow Valley,* 490 U.S. at 349–50)). The extensive body of case law interpreting NEPA and the current CEQ regulations drives much of agencies' modern day practice. A challenge for agencies is that courts have interpreted key terms and requirements differently, adding to the complexity of environmental reviews. As discussed below, the proposed regulations would codify longstanding case law in some instances, and, in other instances, clarify the meaning of the regulations where there is a lack of uniformity in judicial interpretation of NEPA and the CEQ regulations.

D. Statutory Developments

Following enactment of NEPA in 1970 and over the past four decades, Congress has amended or enacted a large number of substantive environmental statutes. These have included significant amendments to the Clean Water Act and Clean Air Act, establishment of new Federal land management standards and planning processes for National forests, public lands, and coastal zones, and statutory requirements to conserve fish, wildlife, and plant species.[35] Additionally, the consideration of the effects on historic properties under the National Historic Preservation Act is typically integrated into the NEPA review.[36] NEPA has served as the umbrella procedural statute, integrating these laws into NEPA reviews and discussing them in NEPA documents.

Over the past two decades and multiple administrations, Congress has also undertaken efforts to facilitate more efficient environmental reviews by Federal agencies, and has enacted a number of statutes aimed at improving the implementation of NEPA, including in the context of infrastructure projects. In particular, Congress enacted legislation to improve coordination among agencies, integrate NEPA with other environmental reviews, and bring more transparency to the NEPA process.

In 2005, Congress enacted 23 U.S.C. 139, ''Efficient environmental reviews for project decisionmaking,'' a streamlined environmental review process for highway, transit, and multimodal transportation projects (the ''section 139 process''), in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU), Public Law 109–59, section 6002(a), 119 Stat. 1144, 1857. Congress amended section 139 with additional provisions designed to improve the NEPA process in the 2012 Moving Ahead for Progress in the 21st Century Act (MAP–21), Public Law 112–141, sections 1305–1309, 126 Stat. 405, and the 2015 Fixing America's Surface Transportation (FAST) Act, Public Law 114–94, section 1304, 129 Stat. 1312, 1378. Section 139 provides for an environmental review process that is based on the NEPA regulations and codifies many aspects of the regulations, including provisions relating to lead and cooperating agencies, concurrent environmental reviews in a single NEPA document, coordination on the development of the purpose and need statement and reasonable alternatives, and adoption of environmental documents. Further, section 139 provides for referral to CEQ for issue resolution, similar to part 1504 of the NEPA regulations, and allows for the use of errata sheets, consistent with 40 CFR 1503.4(c).[37]

[34] *See* Council on Environmental Quality, Length of Environmental Impact Statements (2013–2017), (July 22, 2019), *https://ceq.doe.gov/nepa-practice/eis-length.html.*

[35] *See, e.g.,* the Clean Air Act, 42 U.S.C. 7401–7671q; Clean Water Act, 33 U.S.C. 1251–1388; Coastal Zone Management Act, 16 U.S.C. 1451–1466; Federal Land Policy and Management Act, 43 U.S.C. 1701–1787; Forest and Rangeland Renewable Resources Planning Act of 1974, 16 U.S.C. 1600–1614; Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 1801–1884; Endangered Species Act, 16 U.S.C. 1531–1544; Oil Pollution Act of 1990, 33 U.S.C. 2701–2762; Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. 1201, 1202, and 1211; and Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601–9675.

[36] Similar to NEPA, section 106 (54 U.S.C. 306108) of the National Historic Preservation Act is a procedural statute.

[37] To facilitate the NEPA process for transportation projects subject to section 139, the statute specifically calls for development of a coordination plan, including development of a schedule, and publicly tracking the implementation of that schedule through use of the Permitting Dashboard. In addition, the section 139 process provides for ''participating'' agencies, which are any agencies invited to participate in the environmental review process. Section 139 also requires, to the maximum extent practicable, issuance of a combined final EIS and ROD.

When Congress enacted section 2045 of the Water Resources Development Act of 2007, Public Law 110–114, 121 Stat. 1041, 1103, it created a similar environmental review provision for water resources development projects by the U.S. Army Corps of Engineers. 33 U.S.C. 2348.[38] This project acceleration provision also requires a coordinated environmental review process, provides for dispute resolution, and codifies aspects of the NEPA regulations such as lead and cooperating agencies, concurrent environmental reviews, and the establishment of CEs. Section 2348(o) also directs the Corps to consult with CEQ on the development of guidance for implementing this provision.

Most recently, in 2015 Congress enacted Title 41 of the FAST Act (FAST–41), to provide for a more efficient environmental review and permitting process for ''covered projects.'' *See* Public Law 114–94, § 41001–41014, 129 Stat. 1312, 1741 (42 U.S.C. 4370m—4370m–12). These are projects that require Federal environmental review under NEPA, are expected to exceed $200 million, and involve the construction of infrastructure for certain energy production, electricity transmission, water resource projects, broadband, pipelines, manufacturing, and other sectors. *Id.* FAST–41 codified certain roles and responsibilities required by the NEPA regulations. In particular, FAST–41 imports the concepts of lead and cooperating agencies, and the different levels of NEPA analysis—EISs, EAs, and CEs. Consistent with 40 CFR 1501.5(e) through (f), CEQ is required to resolve any dispute over designation of a facilitating or lead agency for a covered project. 42 U.S.C. 4370m–2(a)(6)(B). Section 4370m–4 codified several requirements from the CEQ regulations, including the requirement for concurrent environmental reviews, which is consistent with 40 CFR 1500.2(c), 1501.7(a)(6) and 1502.25(a), and the tools of adoption, incorporation by reference, supplementation, and use of State documents, consistent with 40 CFR 1506.3, 1502.21, 1502.9(c) and 1506.2.[39] Finally, 42 U.S.C. 4370m–4 addresses interagency coordination on key aspects of the NEPA process including scoping (40 CFR 1501.7), identification of the range of reasonable alternatives for study in an EIS (40 CFR 1502.14), and the public comment process (40 CFR part 1503).

To ensure a timely NEPA process so that important infrastructure projects can move forward, Congress has also established shorter statutes of limitations for challenges to certain types of projects. SAFETEA–LU created a 180-day statute of limitations for highway or public transportation capital projects, which MAP–21 later reduced to 150 days. 23 U.S.C. 139(*l*). The Water Resources Reform and Development Act of 2014 established a three-year statute of limitations for judicial review of any permits, licenses, or other approvals for water resources development project studies. 33 U.S.C. 2348(k). Most recently in FAST–41, Congress established a two-year statute of limitations for covered projects. 42 U.S.C. 4370m–6.

There are a number of additional instances where Congress has enacted legislation to facilitate more timely environmental reviews. For example, similar to the provisions described above, there are other statutes where Congress has called for a coordinated and concurrent environmental review. *See, e.g.,* 33 U.S.C. 408(b) (concurrent review for river and harbor permits); 49 U.S.C. 40128 (coordination on environmental reviews for air tour management plans for national parks); 49 U.S.C. 47171 (expedited and coordinated environmental review process for airport capacity enhancement projects).

Additionally, Congress has established or directed agencies to establish CEs to facilitate NEPA compliance. *See, e.g.,* 16 U.S.C. 6554(d) (applied silvicultural assessment and research treatments); 16 U.S.C. 6591d (hazardous fuels reduction projects to carry out forest restoration treatments); 16 U.S.C. 6591e (vegetation management activity in greater sage-grouse or mule deer habitat); 33 U.S.C. 2349 (actions to repair, reconstruct, or rehabilitate water resources projects in response to emergencies); 42 U.S.C. 15942 (certain activities for the purpose of exploration or development of oil or gas); 43 U.S.C. 1772(c)(5) (development and approval of vegetation management, facility inspection, and operation and maintenance plans); MAP–21, Public Law 112–141, § 1315 (actions to repair or reconstruct roads, highways, or bridges damaged by emergencies), 1316 (projects within the operational right-of-way), and 1317 (projects with limited Federal assistance); FAA Modernization and Reform Act of 2012, Public Law 112–95, 213(c), 126 Stat. 11, 46 (navigation performance and area navigation procedures); and Omnibus Appropriations Act, 2009, Public Law 111–8, 423, 123 Stat. 524, 748 (Lake Tahoe Basin Management Unit hazardous fuel reduction projects).

Further, in the context of emergency response, Congress has directed the use or development of alternative arrangements in accordance with 40 CFR 1506.11 for reconstruction of transportation facilities damaged in an emergency (FAST Act, Pub. L. 114–94, 1432, 129 Stat. 1429) and for projects by the Departments of the Interior and Commerce to address invasive species (Water Infrastructure Improvements for the Nation Act, Pub. L. 114–322, 4010(e)(3), 130 Stat. 1628, 1877). In 2013, Congress also enacted section 429 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (''Stafford Act''), 42 U.S.C. 5189g, which directed the President, in consultation with CEQ and the Advisory Council on Historic Preservation, to ''establish an expedited and unified interagency review process to ensure compliance with environmental and historic requirements under Federal law relating to disaster recovery projects, in order to expedite the recovery process, consistent with applicable law.'' Sandy Recovery Improvement Act of 2013, Public Law 113–2, 1106, 127 Stat. 4, 45. This unified Federal environmental and historic preservation review (UFR) process is a framework for coordinating Federal agency environmental and historic preservation reviews for disaster recovery projects associated with Presidentially declared disasters under the Stafford Act. The goal of the UFR process is to enhance the ability of the Federal environmental review and authorization processes to inform and expedite disaster recovery decisions for grant applicants and other potential beneficiaries of disaster assistance by improving coordination and consistency across Federal agencies, and assisting agencies in better leveraging their resources and tools.[40]

These statutes demonstrate that Congress has recognized that the

[38] Congress significantly revised this provision in the Water Resources Reform and Development Act of 2014, Public Law 113–121, 1005(a)(1), 128 Stat. 1193, 1199.

[39] For covered projects, section 4370m–4 authorizes lead agencies to adopt or incorporate by reference existing environmental analyses and documentation prepared under State laws and procedures if the analyses and documentation meet certain requirements. 42 U.S.C. 4370m–4(b)(1)(A)(i). This provision also requires that the lead agency, in consultation with CEQ, determine that the analyses and documentation were prepared using a process that permitted public participation and consideration of environmental consequences, alternatives, and other required analyses that are substantially equivalent to what a Federal agency would have prepared pursuant to NEPA. *Id.*

[40] *See generally* Memorandum of Understanding Establishing the Unified Federal Environmental and Historic Preservation Review Process for Disaster Recovery Projects (July 29, 2014), *https://www.fema.gov/unified-federal-environmental-and-historic-preservation-review-presidentially-declared-disasters.*

environmental review process can be made more efficient and effective, including for infrastructure projects. Congress also has identified specific process improvements that can accelerate environmental reviews, including improved interagency coordination, concurrent reviews, and increased transparency.

E. Presidential Directives

Over the past two decades and multiple administrations, Presidents also have recognized the need to improve the environmental review process to make it more timely and efficient, and have directed agencies, through Executive Orders and Presidential memoranda, to undertake various initiatives to address these issues. In 2002, President Bush issued E.O. 13274, titled ''Environmental Stewardship and Transportation Infrastructure Project Reviews,'' [41] which stated that the development and implementation of transportation infrastructure projects in an efficient and environmentally sound manner is essential, and directed agencies to conduct environmental reviews for transportation projects in a timely manner.

In 2011, President Obama's memorandum titled ''Speeding Infrastructure Development through More Efficient and Effective Permitting and Environmental Review'' [42] directed certain agencies to identify up to three high-priority infrastructure projects for expedited environmental review and permitting decisions to be tracked publicly on a ''centralized, online tool.'' This requirement led to the creation of what is now the Permitting Dashboard, *www.permits.performance.gov.*

In 2012, E.O. 13604, titled ''Improving Performance of Federal Permitting and Review of Infrastructure Projects,'' [43] established an interagency Steering Committee on Federal Infrastructure Permitting and Review Process Improvement (''Steering Committee'') to facilitate improvements in Federal permitting and review processes for infrastructure projects. The E.O. directed the Steering Committee to develop a plan ''to significantly reduce the aggregate time required to make Federal permitting and review decisions on infrastructure projects while improving outcomes for communities and the environment.'' Similarly, E.O. 13616, titled ''Accelerating Broadband Infrastructure Deployment,'' [44] established an interagency working group to, among other things, avoid duplicative reviews and coordinate review processes to advance broadband deployment.

A 2013 Presidential Memorandum titled ''Modernizing Federal Infrastructure Review and Permitting Regulations, Policies, and Procedures'' [45] directed the Steering Committee established by E.O. 13604 to work with agencies, OMB, and CEQ to ''modernize Federal infrastructure review and permitting regulations, policies, and procedures to significantly reduce the aggregate time required by the Federal Government to make decisions in the review and permitting of infrastructure projects, while improving environmental and community outcomes'' and develop a plan to achieve this goal. Among other things, the memorandum directed that the plan create process efficiencies, including additional use of concurrent and integrated reviews; expand coordination with State, Tribal, and local governments; and expand the use of information technology tools. CEQ and OMB led the effort to develop a comprehensive plan to modernize the environmental review and permitting process while improving environmental and community outcomes, including budget proposals for funding and new authorities. Following the development of the plan, CEQ continued to work with agencies to improve the permitting process, including through expanded collection of timeframe metrics on the Permitting Dashboard. In late 2015, these ongoing efforts were superseded by the enactment of FAST–41, which codified the use of the Permitting Dashboard, established the Federal Permitting Improvement Steering Council (Permitting Council), and established other requirements for managing the environmental review and permitting process for covered infrastructure projects.

On August 15, 2017, President Trump issued E.O. 13807 titled, ''Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure.'' [46] Section 5(e)(i) directed CEQ to develop an initial list of actions to enhance and modernize the Federal environmental review and authorization process, including issuing such regulations as CEQ deems necessary to: (1) Ensure optimal interagency coordination of environmental review and authorization decisions; (2) ensure that multi-agency environmental reviews and authorization decisions are conducted in a manner that is concurrent, synchronized, timely, and efficient; (3) provide for use of prior Federal, State, Tribal, and local environmental studies, analysis, and decisions; and (4) ensure that agencies apply NEPA in a manner that reduces unnecessary burdens and delays, including by using CEQ's authority to interpret NEPA to simplify and accelerate the NEPA review process. In response to E.O. 13807, CEQ published an initial list of actions and stated its intent to review its existing NEPA regulations in order to identify potential revisions to update and clarify these regulations.[47]

F. 2018 Advance Notice of Proposed Rulemaking Requesting Public Comment on CEQ's NEPA Regulations

Consistent with E.O. 13807 and CEQ's initial list of actions, and given the length of time since CEQ issued its regulations, on June 20, 2018, CEQ published an advance notice of proposed rulemaking (ANPRM) titled ''Update to the Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.'' [48] The ANPRM requested public comments on how CEQ could ensure a more efficient, timely, and effective NEPA process consistent with the Act's national environmental policy and provided for a 30-day comment period. In response to comments, CEQ extended the comment period 31 additional days to August 20, 2018.[49]

The ANPRM requested comment on potential revisions to update and clarify the NEPA regulations, and included a list of questions on specific aspects of the regulations. For example, with respect to the NEPA process, the ANPRM asked whether there are provisions that CEQ could revise to ensure more efficient environmental reviews and authorization decisions, such as facilitating agency use of existing environmental studies, analyses and decisions, as well as improving interagency coordination. The ANPRM also requested comments on the scope of NEPA reviews, including whether CEQ should revise, clarify, or add definitions. The ANPRM also asked whether additional revisions relating to environmental documentation issued pursuant to NEPA, including CEs, EAs, EISs, and other documents, would be appropriate. Finally, the ANPRM requested general comments, including

[41] 67 FR 59449 (Sept. 23, 2002).

[42] *https://www.govinfo.gov/content/pkg/DCPD-201100601/pdf/DCPD-201100601.pdf.*

[43] 77 FR 18887 (Mar. 28, 2012).

[44] 77 FR 36903 (June 20, 2012).

[45] 78 FR 30733 (May 22, 2013).

[46] 82 FR 40463 (Aug. 24, 2017).

[47] 82 FR 43226 (Sept. 14, 2017).

[48] 83 FR 28591 (June 20, 2018).

[49] 83 FR 32071 (July 11, 2018).

whether there were obsolete provisions that CEQ could update to reflect new technologies or make the process more efficient, or that CEQ could revise to reduce unnecessary burdens or delays.

In response to the ANPRM, CEQ received over 12,500 comments, which are available for public review.[50] These included comments from a wide range of stakeholders, including States, Tribes, localities, environmental organizations, trade associations, NEPA practitioners, and interested members of the public. While some commenters opposed any updates to the current regulations, other commenters urged CEQ to consider potential revisions. While the approaches to the update of the NEPA regulations varied, most of the substantive comments supported some degree of updating of the current regulations. Many noted that overly lengthy documents and the time required for the NEPA process remain real and legitimate concerns despite the NEPA regulations' explicit direction with respect to reducing paperwork and delays. In general, numerous commenters requested that CEQ consider revisions to modernize its regulations, reduce unnecessary burdens and costs, and make the NEPA process more efficient, effective, and timely. Discussion of comments is provided in more detail in section II below.

II. Summary of Proposed Rule

In this proposed rule, CEQ would revise and modernize its NEPA regulations to facilitate more efficient, effective, and timely NEPA reviews by Federal agencies. The proposed updates and clarifications to its regulations are based on CEQ's record evaluating the implementation of its NEPA regulations and on comments provided in response to the ANPRM. The proposed updates and clarifications seek to advance the stated objectives of the current regulations, as adopted in 1978, ''[t]o reduce paperwork, to reduce delays, and at the same time to produce better decisions [that] further the national policy to protect and enhance the quality of the human environment.'' [51]

CEQ specifically proposes various revisions to align the regulations with the text of the NEPA statute, including revisions to reflect the procedural nature of section 102(2) of NEPA. CEQ also proposes revisions to ensure that environmental documents prepared pursuant to NEPA are concise and serve their purpose of informing decision makers regarding the significant potential environmental effects of proposed major Federal actions and the public of the environmental issues in the pending decision-making process. CEQ also proposes revisions to ensure that the regulations reflect changes in technology, increase public participation in the process, and facilitate the use of existing studies, analyses and environmental documents prepared by States, Tribes, and local governments.

CEQ also proposes revisions to its regulations consistent with the One Federal Decision policy (''OFD policy'') established by E.O. 13807 for multi-agency review and related permitting and other authorization decisions. The E.O. specifically instructed CEQ to take steps to ensure optimal interagency coordination, including through a concurrent, synchronized, timely, and efficient process for environmental reviews and authorization decisions. In response to the ANPRM, CEQ received many suggestions to codify key aspects of the OFD policy in the NEPA regulations, including by providing greater specificity on the roles and responsibilities of lead and cooperating agencies. Commenters also suggested that the regulations require agencies to establish and adhere to timetables for the completion of reviews, another key element of the OFD policy. In response to these comments and to promote interagency coordination and more timely and efficient reviews, CEQ proposes to codify and make generally applicable a number of key elements from expedited procedures and the OFD policy, including development by the lead agency of a joint schedule, procedures to elevate delays or disputes, preparation of a single EIS and joint ROD to the extent practicable, and a two-year goal for completion of environmental reviews. Consistent with section 104 of NEPA (42 U.S.C. 4334), codification of these policies will not limit or affect the authority or legal responsibilities of agencies under other statutory mandates that may be covered by joint schedules, and CEQ proposes language to that effect in § 1500.6.[52]

CEQ also proposes revisions to clarify the process and documentation required for complying with NEPA by amending part 1501 to add sections on threshold considerations and determining the appropriate level of review; add a section on CEs; and revise sections on EAs, FONSIs, and EISs in part 1502. CEQ further proposes a number of revisions to promote more efficient and timely environmental reviews, including revisions to promote interagency coordination by amending sections of parts 1501, 1506, and 1507 relating to lead, cooperating agencies, timing of agency action, scoping, and agency NEPA procedures. CEQ proposes additional revisions to promote a more efficient and timely NEPA process by amending parts 1501, 1506, and 1507 relating to applying NEPA early in the process, scoping, tiering, adoption, use of current technologies, and avoiding duplication of State, Tribal, and local environmental reviews; revisions to parts 1501 and 1502 to provide for presumptive time and page limits; and revisions to clarify the definitions by amending part 1508.

CEQ also includes provisions to promote informed decision making and to inform the public about the decision-making process. In parts 1500, 1501, 1502, and 1503, CEQ proposes amendments to ensure agencies solicit and consider relevant information early in the development of the draft EIS. In particular, CEQ proposes to direct agencies in the notice of intent (NOI) to request public comment on potential alternatives and impacts, and identification of any relevant information and analyses concerning impacts affecting the quality of the human environment. Additionally, CEQ proposes to direct agencies to include a new section in the draft and final EIS summarizing all alternatives, information, and analyses submitted by the public and to request comment on the completeness of the summary included in the draft EIS.

CEQ further proposes to make revisions to part 1503 to ensure that comments are timely submitted on the draft EIS and on the completeness of the summary of information submitted by the public, and that comments are as specific as possible. Additionally, CEQ proposes a provision in § 1502.18 to require that, based on the summary of the alternatives, information, and analyses section, the decision maker for the lead agency certify that the agency has considered such information. This will advance the purposes of the directive in E.O. 11991 to ensure that EISs are supported by evidence that agencies have made the necessary environmental analyses. *See* E.O. 11991, § 1 amending E.O. 11514, § 3(h). Upon certification, the proposed provisions in §§ 1500.3 and 1502.18 would establish a conclusive presumption that the agency has considered such information. In conjunction with the certification requirement, this presumption is

[50] *See https://www.regulations.gov,* docket no. CEQ–2018–0001.

[51] 43 FR 55978 (Nov. 29, 1978).

[52] In the preamble, CEQ uses the section symbol (§) to refer to the proposed regulations as set forth in this NPRM and 40 CFR to refer to the current CEQ regulations as set forth in 40 CFR parts 1500–1508.

consistent with the longstanding presumption of regularity that government officials have properly discharged their official duties. *See U.S. Postal Serv.* v. *Gregory,* 534 U.S. 1, 10 (2001) (''[W]e note that a presumption of regularity attaches to the actions of government agencies.'' (citing *United States* v. *Chem. Found., Inc.,* 272 U.S. 1, 14–15 (1926)). This is also consistent with case law upholding regulatory presumptions. *See, e.g., Allentown Mack Sales & Serv.* v. *Nat'l Labor Relations Bd.,* 522 U.S. 359 (1998); *Fed. Commc'ns Comm'n* v. *Schreiber,* 381 U.S. 279 (1965).

Finally, CEQ proposes changes to make the regulations easier to understand and apply. This includes proposed revisions to simplify and clarify key definitions in § 1508.1. CEQ also proposes certain changes to move and consolidate operative language from the definitions to the relevant regulatory provisions, while leaving the definitional language in the definitions section. In the existing regulations, provisions on certain topics are scattered throughout, making it unnecessarily difficult to navigate the requirements. In some cases, the NEPA regulations address topics in multiple sections and sometimes multiple parts. CEQ proposes to revise the regulations to consolidate provisions and reduce duplication. Such consolidation, reordering, or reorganizing also would promote greater clarity and ease of use.

A. Proposed Changes Throughout Parts 1500–1508

CEQ proposes several revisions throughout parts 1500–1508 to provide consistency, improve clarity, and correct grammatical errors. CEQ proposes to make certain grammatical corrections in the regulations where it proposes other changes to the regulations to achieve the goals of this rulemaking, or where CEQ determined the changes are necessary for the reader to understand fully the meaning of the sentence. CEQ proposes to revise sentences from passive voice to active voice where it is helpful to identify the responsible parties. CEQ also proposes to replace the word ''insure'' with ''ensure,'' consistent with modern usage. Finally, CEQ proposes to add paragraph letters or numbers to certain introductory paragraphs where it would improve clarity. CEQ invites comment on whether it should make these types of changes throughout the rule or if there are additional specific instances where CEQ should make these types of changes.

CEQ proposes to add ''Tribal'' to the phrase ''State and local'' throughout the rule to ensure consultation with Tribal entities and to reflect existing NEPA practice to coordinate or consult with affected Tribal governments and agencies, as necessary and appropriate for a proposed action. This proposed change is also in response to comments on the ANPRM supporting expansion of the recognition of the sovereign rights, interests, and expertise of Tribes. CEQ proposes to eliminate the provisions in the current regulations that limit Tribal interest to reservations. *See* proposed §§ 1501.8(a), 1502.16(a)(5), 1503.1(a)(2)(ii), and 1506.6(b)(3)(ii). The proposed changes are consistent with and in support of government-to-government consultation pursuant to E.O. 13175, titled ''Consultation and Coordination With Indian Tribal Governments.'' [53]

CEQ proposes several changes for consistent use of certain terms. In particular, CEQ proposes to change ''entitlements'' to the defined term ''authorizations'' throughout the proposed regulation and added ''authorizations'' where appropriate to reflect the mandate in E.O. 13807 for better integration and coordination of authorization decisions and related environmental reviews. CEQ proposes conforming edits to add or change ''entitlements'' to ''authorizations'' in proposed §§ 1501.2(a), 1501.7(i), 1501.9(d)(4) and (f)(4), 1502.13, 1502.25(b), 1503.3(d), 1506.2, and the definitions of authorization and participating agency in § 1508.1(c) and (w).

CEQ proposes to use the term ''decision maker'' to refer to an individual responsible for making decisions on agency actions and to define the term ''senior agency official'' to refer to an individual with responsibilities for NEPA compliance. Under the proposed rule, the senior agency official would be an official of assistant secretary rank or higher who is responsible for agency compliance. The responsibilities of this position in the proposed regulations would be consistent with the responsibilities of senior agency officials in E.O. 13807 to whom anticipated missed or extended permitting timetable milestones are elevated. The proposed regulations would set forth a variety of responsibilities for senior agency officials, such as approval to exceed page or time limits. *See* proposed §§ 1501.5(e), 1501.7(d), 1501.8(b)(6) and (c), 1501.10, 1502.7, and 1507.2.

CEQ proposes to replace ''circulate'' or ''circulation'' with ''publish'' or ''publication'' throughout the rule and make ''publish'' a defined term that provides agencies with the flexibility to make environmental review and information available to the public by electronic means not available at the time of promulgation of the CEQ regulations in 1978. Historically, the practice of circulation included mailing of hard copies or providing electronic copies on disks or CDs. While it may be necessary to provide a hard copy or copy on physical media in limited circumstances, agencies now provide most documents in an electronic format by posting them online and using email or other electronic forms of communication to notify interested or affected parties. This change would help reduce paperwork and delays, and modernize the NEPA process to be more accessible to the public. CEQ proposes these changes in proposed §§ 1500.4(o), 1501.2(b)(2), 1502.9, 1502.20, 1502.21, 1503.4(c), 1506.3, and 1506.8(c)(2).

CEQ proposes to change the term ''possible'' to ''practicable'' in proposed §§ 1501.7(h)(1) and (2), 1501.9(b)(1), 1502.5, 1502.9(b), 1504.2, and 1506.2(b) and (c). ''Practicable'' is the more commonly used term in regulations to convey the ability for something to be done, considering the cost, including time required, technical and economic feasibility, and the purpose and need for agency action. Similarly, CEQ proposes to change ''no later than immediately'' to ''as soon as practicable'' in § 1502.5(b). Finally, CEQ proposes to refer to the procedures required in § 1507.3 using the term ''agency NEPA procedures'' throughout.

CEQ proposes to eliminate obsolete references and provisions in several sections of the CEQ regulations. In particular, CEQ proposes to remove references to the 102 Monitor in 40 CFR 1506.6(b)(2) and 1506.7(c) because the publication no longer exists, and OMB Circular A–95, which was revoked pursuant to section 7 of E.O. 12372 (47 FR 30959, July 16, 1982), including the requirement to use State and area-wide clearinghouses in 40 CFR 1501.4(e)(2), 1503.1(a)(2)(iii), 1505.2, and 1506.6(b)(3)(i).

Finally, CEQ proposes changes to citations and authorities. CEQ would update the authorities sections for each part to correct the format. CEQ also proposes to remove cross-references to the sections of part 1508, ''Definitions,'' and to update or insert new cross-references throughout the rule to reflect revised or new sections.

[53] 65 FR 67249 (Nov. 9, 2000).

B. Proposed Revisions To Update the Purpose, Policy, and Mandate (Part 1500)

In part 1500, CEQ proposes several revisions to update the policy and mandate sections of the regulations to reflect statutory, judicial, policy, and other developments since the CEQ regulations were issued in 1978.

CEQ specifically proposes to retitle and revise § 1500.1, ''Purpose and Policy'' to align this section with the statutory text of NEPA and certain case law and reflect the procedural requirements of section 102(2) (42 U.S.C. 4332(2)). In particular, the proposed revisions would provide that NEPA is a procedural statute intended to ensure Federal agencies consider the environmental impacts of their actions in the decision-making process. The Supreme Court has made clear that NEPA is a procedural statute that does not mandate particular results; ''[r]ather, NEPA imposes only procedural requirements on [F]ederal agencies with a particular focus on requiring agencies to undertake analyses of the environmental impact of their proposals and actions.'' *Pub. Citizen,* 541 U.S. at 756–57 (citing *Methow Valley,* 490 U.S. at 349–50); *see also Vt. Yankee,* 435 U.S. at 558 (''NEPA does set forth significant substantive goals for the Nation, but its mandate to the agencies is essentially procedural.'').

CEQ proposes to revise § 1500.1(a) to summarize section 101 of the Act (42 U.S.C. 4331). CEQ further proposes to revise § 1500.1(a) to reflect that section 102(2) establishes the procedural requirements to carry out the policy stated in section 101. Additionally, CEQ proposes to revise § 1500.1(a) to reflect, consistent with the case law, that the purpose and function of NEPA is satisfied if Federal agencies have considered relevant environmental information, that the public has been informed regarding the decision-making process, and that NEPA does not mandate particular results or substantive outcomes. These proposed revisions would revise paragraph (a) in § 1500.1 to replace the vague reference to ''action-forcing'' provisions ensuring that Federal agencies act ''according to the letter and spirit of the Act'' with a more specific reference to the consideration of environmental impacts of their actions in agency decisions. These changes would codify the Supreme Court's interpretation of section 102 as serving NEPA's ''action-forcing'' purpose in two important respects: Section 102 ''ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decision[-]making process and the implementation of that decision.'' *Methow Valley,* 490 U.S. at 349 (citing *Balt. Gas & Elec. Co.,* 462 U.S. at 97; *Weinberger,* 454 U.S. at 143); *see also Winter* v. *Nat. Res. Def. Council, Inc.,* 555 U.S. 7, 23 (2008); *Pub. Citizen,* 541 U.S. at 756–58.

CEQ proposes to revise § 1500.1(b) to describe the regulations that follow consistent with the proposed revisions. In particular, CEQ proposes to revise this paragraph to reflect that the regulations include direction to Federal agencies to determine what actions are subject to NEPA's procedural requirements and the level of NEPA review, where applicable. The proposed revisions also reflect that the regulations are intended to ensure that relevant environmental information is identified and considered early in the process in order to ensure informed decision making by Federal agencies. The proposed revisions reflect that, consistent with E.O. 13807 and the purposes of the regulations as originally promulgated in 1978, the regulations are intended to reduce unnecessary burdens and delays. These proposed revisions are supported by many comments submitted in response to the ANPRM requesting revisions to promote more efficient and timely reviews under NEPA. These proposed amendments emphasize that the policy of integrating NEPA with other environmental reviews is to promote concurrent and timely reviews and decision making consistent with statutes, Executive Orders, and CEQ guidance. *See, e.g.,* 42 U.S.C. 5189g; 23 U.S.C. 139; 42 U.S.C. 4370m *et seq.;* E.O. 13604; E.O. 13807; Mitigation Guidance, *supra* note 18, and Timely Environmental Reviews Guidance, *supra* note 21. Finally, CEQ proposes to strike § 1500.2, ''Policy,'' which is duplicative of subsequent sections of the regulations, in order to simplify the regulations and eliminate redundancy and repetition.

CEQ proposes to make a number of revisions and additions, to § 1500.3, ''NEPA compliance,'' and to provide paragraph headings to improve readability. CEQ proposes to amend the discussion of paragraph (a), ''Mandate,'' to clarify that agency NEPA procedures to implement the CEQ regulations, as provided for in § 1507.3, shall not impose additional procedures or requirements beyond those set forth in the CEQ regulations except as otherwise provided by law or for agency efficiency. CEQ intends that this provision will prevent agencies from designing additional procedures that will result in increased costs or delays.

CEQ proposes to add a new § 1500.3(b), ''Exhaustion,'' which would provide that agencies must request comments on potential alternatives and impacts and identification of any relevant information, studies, or analyses of any kind concerning impacts affecting the quality of the human environment in the notice of intent to prepare an EIS. It would provide that comments on draft EISs and any information on environmental impacts or alternatives to a proposed action must be timely submitted to ensure informed decision making by Federal agencies. CEQ further proposes to provide that comments not timely raised and information not provided shall be deemed unexhausted and forfeited. This reinforces that parties may not raise claims based on issues they did not raise during the public comment period.

It also would provide that agencies must include in the EIS a summary of comments received, and any objections to that summary must be submitted within 30 days of the publication of the notice of availability of the final EIS. Based on the summary, the decision maker must certify in the record of decision that the agency has considered all of the alternatives, information, and analyses submitted by public commenters.

In addition, CEQ proposes to add a new § 1500.3(c), ''Actions regarding NEPA compliance,'' to reflect the development of case law since the promulgation of the CEQ regulations. Specifically, CEQ proposes to revise the sentence regarding timing of judicial review to strike references to the filing of an EIS or FONSI and replace it with the issuance of a signed ROD or the taking of another final agency action. Under the APA, judicial review does not occur until an agency has taken final agency action. *Bennett* v. *Spear,* 520 U.S. 154, 177–78 (1997) (the action must mark the consummation of the agency's decision-making process—it must not be of a merely tentative or interlocutory nature—and the action must be one by which rights or obligations have been determined or from which legal consequences will flow (citations omitted)). Because NEPA's procedural requirements apply to proposals for agency action, judicial review should not occur until the agency has completed its decision-making process. Final agency action for judicial review purposes is not necessarily when the agency publishes the final EIS, issues a

FONSI, or makes the determination to categorically exclude an action; however, an agency may designate any of these as its final agency action. CEQ also proposes to strike vague language and to clarify that an agency can remedy harm from the failure to comply with NEPA by complying with the Act as interpreted in these regulations.

The CEQ regulations create no presumption that violation of NEPA is a basis for injunctive relief or for a finding of irreparable harm. As the Supreme Court has held, the irreparable harm requirement, as a prerequisite to the issuance of preliminary or permanent injunctive relief, is neither eliminated nor diminished in NEPA cases. A showing of a NEPA violation alone does not warrant injunctive relief and does not satisfy the irreparable harm requirement. *See Monsanto Co.* v. *Geertson Seed Farms,* 561 U.S. 139, 157 (2010) (''[T]he statements quoted above [from prior Ninth Circuit cases] appear to presume that an injunction is the proper remedy for a NEPA violation except in unusual circumstances. No such thumb on the scales is warranted.''); *Winter,* 555 U.S. at 21–22, 31–33; *see also Amoco Prod. Co.* v. *Vill. of Gambell,* 480 U.S. 531, 544–545 (1987) (rejecting proposition that irreparable damage is presumed when an agency fails to evaluate thoroughly the environmental impact of a proposed action). Moreover, a showing of irreparable harm in a NEPA case does not entitle a litigant to an injunction or a stay. *See Winter,* 555 U.S. at 20 (''A plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, *and* that an injunction is in the public interest.'') (emphasis added); *Geertson Seed Farms,* 561 U.S. at 157 (''The traditional four-factor test applies when a plaintiff seeks a permanent injunction to remedy a NEPA violation. . . . An injunction should issue only if the traditional four-factor test is satisfied.'').

CEQ proposes to clarify that NEPA and the APA allow agencies the flexibility to structure their decision-making processes to allow opportunities for affected parties to seek a stay of an agency's final decision from the agency pending judicial review of the decision. Such stays are authorized by the APA, are expressly contemplated by Fed. R. App. P. 18, and are analogous in key respects to stays of district court judgments available under Fed. R. Civ. P. 62(b) and (d). *See* 5 U.S.C. 705; *see also* Fed. R. App. P. 18(a)(1) and 18(a)(2)(A). In appropriate circumstances, agencies may impose bond and security requirements or other conditions. *See, e.g.,* 5 U.S.C. 301,[54] as a prerequisite to staying their decisions, as courts do under Fed. R. App. P. 18 and other rules.[55] *See* Fed. R. App. P. 18(b); Fed. R. App. P. 8(a)(2)(E); Fed. R. Civ. P. 65(c); Fed. R. Civ. P. 62(b); Fed. R. Civ. P. 62(d). CEQ invites comment on whether there are disclosure or other transparency requirements that should be required when agencies establish bond or security requirements or other conditions.

In addition to the authority provided by 5 U.S.C. 705 and by agencies' various organic statutes, agency stays of their decisions and appropriate conditions on such stays may further the purposes of NEPA, which provides that all Federal agencies shall identify and develop methods and procedures, in consultation with CEQ, to ensure that environmental amenities and values are given appropriate consideration in decision making along with economic and technical considerations. 42 U.S.C. 4332(B). Agency procedures that allow for agencies to stay their decisions, including appropriate conditions on stays, can contribute to an orderly process whereby judicial review of agency decisions may occur, furthering NEPA's mandate to agencies to develop methods and procedures to ensure the appropriate consideration of environmental, economic, and technical factors in agency decision making. CEQ invites comment on how agencies can structure their processes to ensure appropriate consideration of these factors.

CEQ proposes to add a new § 1500.3(d), ''Remedies.'' CEQ proposes to state explicitly that harm from the failure to comply with NEPA can be remedied by compliance with NEPA's procedural requirements, and that CEQ's regulations do not create a cause of action for violation of NEPA. The statute does not create any such cause of action, and agencies may not create private rights of action by regulation; ''[l]ike substantive [F]ederal law itself, private rights of action to enforce [F]ederal law must be created by Congress.'' *Alexander* v. *Sandoval,* 532 U.S. 275, 286 (2001). CEQ also proposes to state that any actions to review, enjoin, stay, or alter an agency decision on the basis of an alleged NEPA violation be raised as soon as practicable to avoid or minimize any costs to agencies, applicants, or any affected third parties. As reflected in comments received in response to the ANPRM, delays have the potential to result in substantial costs.

CEQ also proposes to state that minor, non-substantive errors that have no effect on agency decision making shall be considered harmless and shall not invalidate an agency action. This would replace and update 40 CFR 1500.3, which provides that trivial violations should not give rise to an independent cause of action. Invalidating actions due to minor errors does not advance the goals of the statute and adds delays and costs.

Finally, CEQ proposes to add a new § 1500.3(e), ''Severability,'' to address the possibility that this rule, or portions of this rule, may be challenged in litigation. It is CEQ's intent that the individual sections of this rule be severable from each other, and that if any sections or portions of the regulations are stayed or invalidated, the validity of the remainder of the sections shall not be affected and shall continue to be operative.

CEQ proposes to reorder the paragraphs in § 1500.4, ''Reducing paperwork,'' and § 1500.5, ''Reducing delay,'' for a more logical ordering, consistent with the three levels of NEPA review. Finally, CEQ proposes edits to § 1500.4 and § 1500.5 for consistency with proposed edits to the cross-referenced sections.

Finally, as noted above, CEQ proposes to add a savings clause to § 1500.6, ''Agency authority,'' to clarify that the CEQ regulations do not limit an agency's other authorities or legal responsibilities. This clarification is consistent with section 104 of NEPA (42 U.S.C. 4334) and the current regulations, but acknowledges the possibility of different statutory authorities that may set forth different requirements, such as timeframes.

CEQ invites comment on the proposed changes to part 1500, particularly proposed § 1500.3 and whether CEQ should include any additional changes or provisions to advance timely resolution of disputes related to NEPA compliance to ensure a

[54] 5 U.S.C. 301, titled ''Department regulations,'' is known as the housekeeping statute and permits the head of a Department to promulgate regulations ''for the government of his department, the conduct of its employees, the distribution and performance of its business, and the custody, use, and preservation of its records, papers, and property.'' The purpose of this statute is ''simply a grant of authority to [an] agency to regulate its own affairs'' through ''what the APA terms 'rules of agency organization, procedure or practice' as opposed to 'substantive rules.' '' *Chrysler Corp.* v. *Brown,* 441 U.S. 281, 309–10 (1979).

[55] CEQ notes that there is no ''NEPA exception'' that exempts litigants bringing NEPA claims from otherwise applicable bond or security requirements or other appropriate conditions, and that some courts have imposed substantial bond requirements in NEPA cases.

timely and predictable process, and avoidance of litigation.

C. Proposed Revisions to NEPA and Agency Planning (Part 1501)

CEQ proposes significant changes to part 1501. CEQ proposes to replace the current 40 CFR 1501.1, ''Purpose,'' because it is unnecessary and duplicative, with a new section to address threshold considerations. CEQ proposes to add additional sections to address the level of NEPA review and CEs. CEQ further proposes to consolidate and clarify provisions on EAs and FONSIs, and relocate from part 1502 the provisions on tiering and incorporation by reference. CEQ also proposes to set presumptive time limits for the completion of NEPA reviews, and clarify the roles of lead and cooperating agencies to further the OFD policy and encourage more efficient and timely NEPA reviews.

1. NEPA Threshold Applicability Analysis (§ 1501.1)

Since the enactment of NEPA, courts have examined the applicability of NEPA based on a variety of considerations. For example, courts have found that NEPA is inapplicable where an agency is carrying out a non-discretionary duty or obligation, where an agency's statutory obligations clearly or fundamentally conflict with NEPA compliance, where Congress has established requirements under another statute that displaces NEPA compliance, and where environmental review and public participation procedures under another statute are functionally equivalent to those required by NEPA.

CEQ proposes a new § 1501.1, ''NEPA threshold applicability analysis,'' to provide a series of considerations to assist agencies in a threshold analysis for determining whether NEPA applies. CEQ also proposes related changes in § 1507.3(c) to provide that agencies may identify actions that are not subject to NEPA in their agency NEPA procedures. Paragraph (b) of § 1501.1 would clarify that agencies can also make this determination on a case-by-case basis.

2. Apply NEPA Early in the Process (§ 1501.2)

CEQ proposes to amend the introductory paragraph of § 1501.2, ''Apply NEPA early in the process,'' to change ''shall'' to ''should'' and ''possible'' to ''reasonable.'' Agencies need the discretion to structure the timing of their NEPA processes to align with their decision-making processes, consistent with their statutory authorities. Agencies need flexibility to determine the appropriate time to start the NEPA process, based on the context of the particular proposed action and governed by the rule of reason, so that the NEPA analysis meaningfully informs the agency's decision. The appropriate time to begin the NEPA process is dependent on when the agency has sufficient information and how it can most effectively integrate the NEPA review into the agency's decision-making process. Further, some have viewed this provision as a legally enforceable standard, rather than an opportunity for agencies to integrate NEPA into their decision-making programs and processes. CEQ's view is that agencies should have discretion with respect to timing, consistent with its regulatory provisions for deferring NEPA analysis to appropriate points in the decision-making process. *See* 40 CFR 1508.28. This proposed amendment is consistent with CEQ guidance that agencies should ''concentrate on relevant environmental analysis'' in their EISs rather than ''produc[ing] an encyclopedia of all applicable information.'' Timely Environmental Reviews Guidance, *supra* note 21; *see also* 40 CFR 1500.4(b) and 1502.2(a). Therefore, CEQ proposes these changes to clarify that agencies have discretion to structure their NEPA processes in accordance with the rule of reason. CEQ also proposes to change ''possible'' to ''reasonable'' in paragraph (b)(4)(iii) and ''shall'' to ''should'' in the introductory paragraph of § 1502.5 for consistency.

CEQ also proposes to amend § 1501.2(b)(2) to clarify that agencies should consider economic and technical analyses along with environmental effects. Finally, CEQ proposes to amend paragraph (b)(4)(ii) to change ''agencies'' to ''governments'' consistent with and in support of government-to-government consultation pursuant to E.O. 13175 [56] and E.O. 13132, ''Federalism.'' [57] For consistency, CEQ also proposes revisions to §§ 1501.9(b) and 1503.1(a)(2)(ii).

3. Determine the Appropriate Level of NEPA Review (§ 1501.3)

NEPA requires a ''detailed statement'' for ''major Federal actions significantly affecting the quality of the human environment.'' 42 U.S.C. 4332(2)(C). To determine whether an action requires such a detailed statement, the CEQ regulations provide three levels of review for Federal agencies to assess proposals for agency action. Specifically, the CEQ regulations allow agencies to review expeditiously those actions that normally do not have significant effects by using CEs or, for actions that are not likely to have significant effects, by preparing an EA. Through the use of CEs and EAs, agencies then can focus their limited resources on those actions that are likely to have significant effects and require the ''detailed statement,'' or EIS, required by NEPA.

While the existing CEQ regulations provide for these three levels of NEPA review, they do not clearly set out the decisional framework by which agencies should assess their proposed actions and select the appropriate level of review. To provide this direction and clarity, the proposed rule would add two additional sections to part 1501, renumber the remaining sections, and retitle two sections. The proposed § 1501.3, ''Determine the appropriate level of NEPA review,'' would describe the three levels of NEPA review and the basis upon which an agency makes a determination regarding the appropriate level of review for a proposed action. While this section would supplement the existing regulations, these concepts exist in the current 40 CFR 1501.4 (whether to prepare an EIS), 1508.4 (CEs), and 1508.9 (EAs).

Additionally, paragraph (b) would address the consideration of significance, which is central to determining the appropriate level of review. CEQ proposes to move and simplify the operative language from 40 CFR 1508.27, ''Significantly.'' CEQ proposes to change ''context'' to ''potentially affected environment'' and ''intensity'' to ''degree'' to provide greater clarity as to what agencies should consider in assessing potential significant effects. CEQ did not include a consideration regarding controversy (40 CFR 1508.27(b)(4)) because this has been interpreted to mean scientific controversy. Additionally, CEQ did not include a consideration regarding the reference in 40 CFR 1508.27(b)(7) to ''[s]ignificance cannot be avoided by terming an action temporary or by breaking it down into small component parts'' because this is addressed in the criteria for scope in § 1501.9(e) and § 1502.4(a), which would provide that agencies evaluate in a single EIS proposals or parts of proposals that are related closely enough to be, in effect, a single course of action.

4. Categorical Exclusions (CEs) (§ 1501.4)

Under the CEQ regulations, agencies can categorically exclude actions from detailed review where the agency has found in its agency NEPA procedures that the action normally would not have

[56] *Supra* note 53.

[57] 64 FR 43255 (Aug. 10, 1999).

significant effects. Over the past 4 decades, Federal agencies have developed and documented more than 2,000 CEs.[58] CEQ estimates that each year, Federal agencies apply CEs to approximately 100,000 Federal agency actions that typically require little or no documentation.[59] While CEs are the most common level of NEPA review, CEQ has only addressed CE development and implementation in one comprehensive guidance document, *see* CE Guidance, *supra* note 17, and does not address CEs in detail in its current regulations.

In response to the ANPRM, many commenters requested that CEQ update the NEPA regulations to provide more detailed direction on the application of CEs. To provide greater clarity, CEQ proposes to add a new section on CEs. The proposed § 1501.4, ''Categorical exclusions,'' would address in more detail the process by which an agency considers whether a proposed action is categorically excluded under NEPA. This proposed provision is consistent with the definition of categorical exclusion in 40 CFR 1508.4, which is a category of actions that the agency has found normally do not have a significant effect and listed in its agency NEPA procedures.

The proposed CE section would provide additional clarity on the process that agencies follow in applying a CE. In particular, paragraph (a) would provide that agencies identify CEs in their NEPA procedures, consistent with the requirement to establish CEs in agency NEPA procedures currently set forth in 40 CFR 1507.3(b)(2)(ii). The proposed regulations would move the requirement that agency NEPA procedures provide for extraordinary circumstances from the current 40 CFR 1508.4 to the proposed § 1507.3(d)(2)(ii) to consolidate all the requirements for establishing CEs in that regulation, while providing in the proposed § 1501.4 the procedure for evaluation of a proposed action for extraordinary circumstances. The definition of categorical exclusion only applies to those CEs created by an administrative determination in its agency NEPA procedures and does not apply to ''legislative categorical exclusions'' created by Congress, which are governed by the terms of the specific statute and statutory interpretation of the agency charged with the implementation of the statute.

Paragraph (b) of proposed § 1501.4 would set forth the requirement for consideration of extraordinary circumstances once an agency determines that a CE covers a proposed action, consistent with the current requirement in 40 CFR 1508.4. Finally, paragraph (b)(1) would provide that, when extraordinary circumstances are present, agencies may consider whether mitigating circumstances, such as the design of the proposed action to avoid effects that create extraordinary circumstances, are sufficient to allow the proposed action to be categorically excluded. The change would clarify that the mere presence of extraordinary circumstances does not preclude the application of a CE. Rather, the agency may consider whether there is a close causal relationship between a proposed action and the potential effect on the conditions identified as extraordinary circumstances, and if such a relationship exists, the potential effect of a proposed action on these conditions. Accordingly, the agency could modify the proposed action to avoid the extraordinary circumstances so that the action fits in the categorical exclusion. While this reflects current practice for some agencies,[60] this revision would assist agencies as they consider whether to categorically exclude an action that would otherwise be considered in an EA and FONSI.

CEQ invites comment on these proposed revisions and on whether there are any other aspects of CEs that CEQ should address in its regulations. Specifically, CEQ invites comment on whether it should establish government-wide CEs in its regulations to address routine administrative activities, for example, internal orders or directives regarding agency operations, procurement of office supplies and travel, and rulemakings to establish administrative processes such as those established under the Freedom of Information Act or Privacy Act. Alternatively, CEQ invites comment on whether and how CEQ should revise the definition of major Federal action to exclude these categories from the definition, and if so, suggestions on how it should be addressed.

5. Environmental Assessments (EAs) (§ 1501.5)

Under the current CEQ regulations, when an agency has not categorically excluded a proposed action, the agency can prepare an EA to document its effects analysis. If the analysis in the EA demonstrates that the action's effects would not be significant, the agency documents its reasoning in a FONSI, which completes the NEPA process; otherwise, the agency uses the EA to help prepare an EIS. *See* 40 CFR 1508.9 and 1508.13. CEQ estimates that Federal agencies prepare approximately 10,000 EAs each year.[61]

The current CEQ regulations address the requirements for EAs in a few provisions, and, in response to the ANPRM, some commenters requested that the regulations provide more detailed direction related to EAs. Currently, 40 CFR 1508.9 defines an EA as a ''concise public document'' that agencies may use to comply with NEPA and determine whether to prepare an EIS or a FONSI. This section also sets forth the basic requirements for an EA's contents. Current 40 CFR 1501.4(b) provides the public involvement requirements for EAs. These essential requirements of an EA would remain under the proposed regulations, but CEQ proposes to consolidate them into a single section to improve readability.

Under the current regulations, the format for an EA is flexible and responsive to agency decision-making needs and the circumstances of the particular proposal for agency action. The proposed CEQ regulations would continue to provide that an EA may be prepared by and with other agencies, applicants, and the public. Modern information technology can help facilitate this collaborative EA preparation, allowing the agency to make a coordinated but independent evaluation of the environmental issues and assume responsibility for the scope and content of the EA.

CEQ proposes to revise paragraph (a) of proposed § 1501.5 (current 40 CFR 1501.3) to clarify that an agency must prepare an EA when necessary to determine whether a proposed action would have a significant effect or the significance of the effects is unknown, unless a CE applies to the proposed action or the agency decides to prepare an EIS. CEQ proposes to move the operative language relating to an EA

[58] *See* Council on Environmental Quality, List of Federal Agency Categorical Exclusions (Dec. 14, 2018), *https://ceq.doe.gov/nepa-practice/categorical-exclusions.html.*

[59] *See, e.g.,* Council on Environmental Quality, The Eleventh and Final Report on the National Environmental Policy Act Status and Progress for American Recovery and Reinvestment Act of 2009 Activities and Projects (Nov. 2, 2011), *https://ceq.doe.gov/docs/ceq-reports/nov2011/CEQ_ARRA_NEPA_Report_Nov_2011.pdf.*

[60] *See, e.g.,* Forest Service categorical exclusions, 36 CFR 220.6(b)(2) and surface transportation categorical exclusions, 23 CFR 771.116–771.118.

[61] *See, e.g.,* Council on Environmental Quality, Fourth Report on Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act, Attachment A (Oct. 4, 2016), *https://ceq.doe.gov/docs/ceq-reports/Attachment-A-Fourth-Cooperating-Agency-Report_Oct2016.pdf.*

from the definition of EAs currently in 40 CFR 1508.9 to a new paragraph (c).

Under the proposed CEQ regulations, requirements for documenting the proposed action and alternatives in an EA would continue to be more limited than EIS requirements. Under the existing and proposed regulations, an agency must briefly describe the need for the proposed action. Agencies can do this by briefly describing the existing conditions, projected future conditions, and statutory obligations and authorities that may relate to the proposed agency action with cross-references to supporting documents. The proposed CEQ regulations would continue to require agencies to describe briefly the proposed action and any alternatives it is considering that would meet the need of the proposed agency action. For actions to protect or restore the environment, without unresolved conflicts concerning alternative uses of available resources, CEQ expects agencies to examine a narrower range of alternatives to the proposed action. When the project may have significant impacts, the agency should consider reasonable alternatives that would avoid those impacts or otherwise mitigate those impacts to less than significant levels.

An agency does not need to include a detailed discussion of each alternative in an EA, nor does it need to include any detailed discussion of alternatives that it eliminated from study. While agencies have discretion to include more information in their EAs than is required to determine whether to prepare an EIS or a FONSI, they should carefully consider their reasons and have a clear rationale for doing so. Agencies should focus on analyzing material effects and alternatives, rather than marginal details that may unnecessarily delay the environmental review process.

Under both the current and proposed regulations, an agency must describe the environmental impacts of its proposed action and alternatives, providing enough information to support a determination to prepare either a FONSI or an EIS. The EA should focus on whether the proposed action (including mitigation) would ''significantly'' affect the quality of the human environment and tailor the length of the discussion to the relevant effects. The agency may contrast the impacts of the proposed action and alternatives with the current and expected future conditions of the affected environment in the absence of the action, which constitutes consideration of a no-action alternative.

Under both the current and proposed regulations, an agency should list the ''agencies, applicants, and the public'' involved in preparing the EA to document agency compliance with the requirement to ''involve environmental agencies, applicants, and the public, to the extent practicable, in preparing assessments.'' 40 CFR 1501.4(b); *see also* 1508.9(b). This may include incorporation by reference to the records related to compliance with other environmental laws such as the National Historic Preservation Act, Clean Water Act, Endangered Species Act, or Clean Air Act.

CEQ proposes to move the public involvement requirements for EAs from the current 40 CFR 1501.4(b) to proposed § 1501.5(d) and change ''environmental'' to ''relevant'' agencies to include all agencies that may contribute information that is relevant to the development of an EA. Consistent with the current CEQ regulations, the proposed rule would not specifically require publication of a draft EA for public review and comment. The proposed CEQ regulations would continue to require that agencies reasonably involve relevant agencies, the applicant, and the public prior to completion of the EA, so that they may provide meaningful input on those subject areas that the agency must consider in preparing the EA. *See also* 40 CFR 1506.6(b) and 1508.9(a). Depending on the circumstances, the agency could provide adequate information through public meetings or by a detailed scoping notice, for example. There is no single correct approach for public involvement. Rather, agencies should consider the circumstances and have discretion to conduct public involvement tailored to the interested public, to available means of communications to reach the interested and affected parties, and to the particular circumstances of each proposed action.

Paragraph (e) would establish a presumptive 75-page limit for EAs, but allow a senior agency official to approve a longer length and establish a new page limit in writing. While CEQ has stated in Question 36a of the Forty Questions, *supra* note 10, that EAs should be approximately 10 to 15 pages, in practice, such assessments are often longer to address compliance with other applicable laws, and to document the effects of mitigation to support a FONSI. To achieve the presumptive 75-page limit, agencies should write all NEPA environmental documents in plain language, follow a clear format, and emphasize important impact analyses and relevant information necessary for those analyses, rather than providing extensive background material. An EA should have clear and concise conclusions and may incorporate by reference data, survey results, inventories, and other information that support these conclusions, so long as this information is reasonably available to the public.

The proposed presumptive page limit for EAs will promote more readable documents, but also provide agencies flexibility to prepare longer documents, where necessary, to support the agency's analysis. The proposed presumptive page limit is consistent with CEQ's guidance on EAs, which advises agencies to avoid preparing lengthy EAs except in unusual cases where a proposal is so complex that a concise document cannot meet the goals of an EA and where it is extremely difficult to determine whether the proposal could cause significant effects. Question 36a and 36b, Forty Questions, *supra* note 10.

CEQ believes that page limits will encourage agencies to identify the relevant issues, focus on significant environmental impacts, and prepare concise readable documents that will inform decision makers as well as the public. Voluminous, unfocused environmental documents do not advance the goals of informed decision making or protection of the environment.

CEQ proposes conforming edits to § 1500.4(c) to broaden the paragraph to include EAs by changing ''environmental impact statements'' to ''environmental documents'' and changing ''setting'' to ''meeting'' since page limits would be required for both EAs and EISs. CEQ invites comment on the appropriate presumptive page limit for EAs, the means of managing their level of detail, and their role in agency decision making.

CEQ proposes a new paragraph (f) to clarify that agencies may also apply certain provisions in part 1502 regarding incomplete or unavailable information, methodology and scientific accuracy, and coordination of environmental review and consultation requirements to EAs. CEQ also proposes to add EAs to § 1501.11, ''Tiering,'' to codify current agency practice of using EAs where the effects of a proposed agency action are not likely to be significant. These include program decisions that may facilitate later site-specific EISs as well as the typical use of EAs as a second-tier document tiered from an EIS.

In addition to the new § 1501.5, CEQ proposes to add EAs to other sections of the regulations to codify existing agency practice where it would make the NEPA process more efficient and effective. As

discussed in section II.C.9, CEQ also proposes to make a presumptive time limit applicable to EAs in § 1501.10. Further, for some agencies, it is a common practice to have lead and cooperating agencies coordinate in the preparation of EAs where more than one agency may have an action on a proposal; therefore, CEQ also proposes to add EAs to §§ 1501.7 and 1501.8.

CEQ invites comment on these proposed revisions and on whether there are any other aspects of EAs that CEQ should address in its regulations.

6. Findings of No Significant Impact (FONSIs) (§ 1501.6)

When an agency determines in its EA that an EIS is not required, it typically prepares a FONSI. The FONSI reflects that the agency has engaged in the necessary review of environmental impacts under NEPA. The FONSI shows that the agency examined the relevant data and explained the agency findings by providing a rational connection between the facts presented in the EA and the conclusions drawn in the finding. Any finding should clearly identify the facts found and the conclusions drawn by the agency based on those facts.

In response to the ANPRM, CEQ received comments requesting that CEQ update its regulations to consolidate and provide more detailed direction relating to FONSIs. CEQ proposes to consolidate the operative language of 40 CFR 1508.13, ''Finding of no significant impact,'' with 40 CFR 1501.4, ''Whether to prepare an environmental impact statement,'' in the proposed § 1501.6, ''Findings of no significant impact.'' CEQ proposes to strike paragraph (a) as these requirements are addressed in § 1507.3(d)(2). As noted above, paragraph (b) would move to the proposed § 1501.5, ''Environmental assessments.'' This proposed EA section also addresses paragraph (c), so CEQ proposes to strike it from the proposed FONSI section. Similarly, CEQ proposes to strike paragraph (d) because this requirement is addressed in § 1501.9, ''Scoping'' (current 40 CFR 1501.7).

CEQ proposes to make the current 40 CFR 1501.4(e) the new § 1501.6(a), and revise the language to clarify that an agency must prepare a FONSI when it determines that a proposed action will not have significant effects based on the analysis in the EA. CEQ would revise proposed paragraph (a)(2) to clarify that the circumstances listed in paragraph (i) and (ii) are the situations where the agency must make a FONSI available for public review.

CEQ proposes to move the substantive requirement that a FONSI include the EA or a summary from the definition of FONSI (currently 40 CFR 1508.13) to a new paragraph (b). Additionally, CEQ proposes the addition of a new paragraph (c) to address mitigation. Specifically, where mitigation is required under another statute or where an agency is issuing a mitigated FONSI, it would require the agency to include the legal basis for any mitigation adopted.[62] Additionally, it would codify the practice of mitigated FONSIs, consistent with CEQ's Mitigation Guidance, by requiring agencies to document mitigation, including enforceable mitigation requirements or commitments that will be undertaken to avoid significant impacts.[63] When preparing an EA, many agencies develop, consider, and commit to mitigation measures to avoid, minimize, rectify, reduce, or compensate for potentially significant adverse environmental impacts that would otherwise require preparation of an EIS. An agency can commit to mitigation measures for a mitigated FONSI when it can ensure that the mitigation will be performed, when the agency expects that resources will be available, and when the agency has sufficient legal authorities to ensure implementation of the proposed mitigation measures. This codification of CEQ guidance is not intended to create a different standard for analysis of mitigation for a ''mitigated FONSI,'' but to provide clarity regarding the use of FONSIs.

7. Lead and Cooperating Agencies (§§ 1501.7 and 1501.8)

In response to the ANPRM, CEQ received comments requesting that CEQ update its regulations to clarify the roles of lead and cooperating agencies. The 1978 CEQ regulations created the roles of lead agency and cooperating agencies for NEPA reviews, which are critical for actions, such as non-Federal projects, requiring the approval or authorization of multiple agencies. Agencies need to coordinate and synchronize their NEPA processes to ensure an efficient environmental review that does not cause delays. In recent years, Congress and several administrations have worked to establish a more synchronized procedure for multi-agency NEPA reviews and related authorizations, including through the development of expedited procedures such as the section 139 process and FAST–41.

CEQ proposes a number of modifications to § 1501.7, ''Lead agencies,'' (current 40 CFR 1501.5), and § 1501.8, ''Cooperating agencies,'' (current 40 CFR 1501.6), to improve interagency coordination, make development of NEPA documents more efficient, and facilitate implementation of the OFD policy. CEQ intends these modifications to improve the efficiency and outcomes of the NEPA process—including cost reduction, improved relationships, and better outcomes that avoid litigation—by promoting environmental collaboration.[64] These modifications are consistent with Questions 14a and 14c of the Forty Questions, *supra* note 10. CEQ proposes to apply §§ 1501.7 and 1501.8 to EAs as well as EISs consistent with agency practice. Consistent with the OFD policy to ensure coordinated and timely reviews, CEQ also proposes to add a § 1501.7(g) to require that Federal agencies evaluate proposals involving multiple Federal agencies in a single EIS and issue a joint ROD[65] or single EA and joint FONSI when practicable. CEQ further proposes to move language from the current cooperating agency provision, 40 CFR 1501.6(a), that addresses the lead agency's responsibilities with respect to cooperating agencies to proposed paragraph (h) in § 1501.7 so that all of the lead agency's responsibilities are in a single section. CEQ also proposes to clarify in paragraph (h)(4) that the lead agency is responsible for determining the purpose and need and alternatives in consultation with any cooperating agencies.[66]

[62] As discussed in sections I.B.1 and II.B, NEPA is a procedural statute and does not require adoption of mitigation. However, agencies may consider mitigation measures that would avoid, minimize, rectify, reduce, or compensate for potentially significant adverse environmental impacts and may require mitigation pursuant to substantive statutes.

[63] The Mitigation Guidance, *supra* note 18, amended and supplemented the Forty Questions, *supra* note 10, specifically withdrawing Question 39 insofar as it suggests that mitigation measures developed during scoping or in an EA ''[do] not obviate the need for an EIS.''

[64] *See, e.g.,* Federal Forum on Environmental Collaboration and Conflict Resolution, Environmental Collaboration and Conflict Resolution (ECCR): Enhancing Agency Efficiency and Making Government Accountable to the People (May 2, 2018), *https://ceq.doe.gov/docs/nepa-practice/ECCR_Benefits_Recommendations_Report_%205-02-018.pdf.*

[65] A ''single ROD,'' as used in E.O. 13807, is the same as a ''joint ROD,'' which is a ROD addressing all Federal agency actions covered in the single EIS and necessary for a proposed project. 40 CFR 1508.25(a)(3). The regulations would provide flexibility for circumstances where a joint ROD is impracticable. Examples include the statutory directive to issue a combined final EIS and ROD for transportation actions and the Federal Energy Regulatory Commission's adjudicatory process.

[66] *See* OFD Framework Guidance, *supra* note 27, § VIII.A.5 (''The lead agency is responsible for developing the Purpose and Need, identifying the range of alternatives to be analyzed, identifying the preferred alternative and determining whether to

Proposed § 1501.7(i) and (j) and § 1501.8(b)(6) and (7) also would require development and adherence to a schedule for the environmental review and any authorizations required for a proposed action, and resolution of disputes and other issues that may cause delays in the schedule. These proposed provisions are consistent with current practices at agencies that have adopted elevation procedures pursuant to various statutes and guidance, including 23 U.S.C. 139, FAST–41, and E.O. 13807.

Proposed paragraph (a) of § 1501.8 would clarify that lead agencies may invite State, Tribal, and local agencies to serve as cooperating agencies by changing ''Federal agency'' to ''agency,'' and moving the operative language from the definition of cooperating agency (40 CFR 1508.5). Non-Federal agencies should participate in the environmental review process to ensure early collaboration on proposed actions where such entities have jurisdiction by law or special expertise. Paragraph (a) would also codify current practice to allow a Federal agency to appeal to CEQ a lead agency's denial of a request to serve as cooperating agency. Resolving disputes among agencies early in the process furthers the OFD policy and the goal of more efficient and timely NEPA reviews. Finally, CEQ proposes edits throughout § 1501.8 to provide further clarity.

8. Scoping (§ 1501.9)

In response to the ANPRM, CEQ received comments requesting that CEQ update its regulations related to scoping, including comments requesting that agencies have greater flexibility in how to conduct scoping. Rather than requiring publication of a NOI as a precondition to the scoping process, CEQ proposes to modify the current 40 CFR 1501.7, ''Scoping,'' in the proposed § 1501.9 so that agencies can begin the scoping process as soon as the proposed action is sufficiently developed for meaningful agency consideration. Some agencies refer to this as pre-scoping under the existing regulations to capture scoping work done before publication of the NOI. Rather than tying the start of scoping to the agency's decision to publish an NOI to prepare an EIS, the timing and content of the NOI would instead become an important step in the scoping process itself, thereby obviating the artificial distinction between scoping and pre-scoping. However, agencies should not unduly delay publication of the NOI.

CEQ also proposes to consolidate all the requirements for the NOI and the scoping process into the same section, reorganize it to discuss the scoping process in chronological order, and add paragraph headings to improve clarity. CEQ proposes to add ''likely'' to proposed paragraph (b) to capture the reality that at the scoping stage, agencies may not know the identities of all affected parties and that one of the purposes of scoping is to identify affected parties. Paragraph (c) would provide agencies additional flexibility in how to reach interested or affected parties in the scoping process. Paragraph (d) would provide a list of what agencies must include in an NOI to standardize NOI format and achieve greater consistency across agencies. This will provide the public with more transparency and ensure that agencies conduct the scoping process in a manner that facilitates implementation of the OFD policy for multi-agency actions, including by proactively soliciting comments on alternatives, impacts, and relevant information to better inform agency decision making. CEQ proposes to move the criteria for determining scope from the definition of scope, 40 CFR 1508.25, to paragraph (e) and to strike the paragraph on ''cumulative actions'' for consistency with the proposed revisions to the definition of ''effects'' discussed below. CEQ also proposes to use the term ''most effective'' rather than ''best'' in § 1501.9(e)(1)(ii) for clarity.

9. Time Limits (§ 1501.10)

In response to the ANPRM, CEQ received many comments on the lengthy timelines and costs of environmental reviews, and many suggestions for more meaningful time limits for the completion of the NEPA process. Accordingly, and to promote timely reviews, CEQ proposes to establish presumptive time limits for EAs and EISs consistent with E.O. 13807 and prior CEQ guidance. In Question 35 of the Forty Questions, *supra* note 10, CEQ stated its expectation that ''even large complex energy projects would require only about 12 months for the completion of the entire EIS process'' and that, for most major actions, ''this period is well within the planning time that is needed in any event, apart from NEPA.'' CEQ also recognized that ''some projects will entail difficult long-term planning and/or the acquisition of certain data which of necessity will require more time for the preparation of the EIS.'' *Id.* Finally, Question 35 stated that an EA ''should take no more than 3 months, and in many cases substantially less as part of the normal analysis and approval process for the action.''

Based on agency experience with the implementation of the regulations, CEQ is proposing in § 1501.10, ''Time limits,'' (current 40 CFR 1501.8) to add a new paragraph (b) to establish a presumptive time limit for EAs of 1 year and a presumptive time limit for EISs of 2 years. CEQ further proposes to provide that a senior agency official may approve in writing a longer time period. These paragraphs would also define the start and end dates of the time period consistent with E.O. 13807. Consistent with CEQ and OMB guidance, agencies should begin scoping and development of a schedule for timely completion of an EIS prior to issuing an NOI and commit to cooperate, communicate, share information, and resolve conflicts that could prevent meeting milestones.[67] CEQ recognizes that agency capacity, including those of cooperating and participating agencies, may affect timing, and that agencies should schedule and prioritize their resources accordingly to ensure effective environmental analyses and public involvement. Further, agencies have flexibility in the management of their internal processes to set shorter time limits and to define the precise start and end times for measuring the completion time of an EA. Therefore, CEQ proposes to retain paragraph (c) regarding factors in determining time limits, but revise paragraph (c)(6) for clarity and strike paragraph (c)(7) because it overlaps with numerous other factors.

CEQ also proposes conforming edits to § 1500.5(g) to change ''setting'' to ''meeting'' time limits and add ''environmental assessment.'' CEQ invites comment on these sections, including on the proposed presumptive timeframes for EAs and EISs, the provisions for management of time limits, and whether the regulations should specify shorter timeframes.

10. Tiering and Incorporation by Reference (§§ 1501.11 and 1501.12)

CEQ proposes to move 40 CFR 1502.21, ''Tiering,'' and 40 CFR 1502.22, ''Incorporation by reference,'' to proposed new §§ 1501.11 and 1501.12, respectively, because these provisions are generally applicable. Specifically, CEQ proposes a number of revisions in § 1501.11 and other paragraphs to clarify when agencies can use existing

develop the preferred alternative to a higher level of detail.''); Connaughton Letter, *supra* note 23 (''[J]oint lead or cooperating agencies should afford substantial deference to the [ ] agency's articulation of purpose and need.'')

[67] *See* OFD Framework Guidance, *supra* note 27 (''[w]hile the actual schedule for any given project may vary based upon the circumstances of the project and applicable law, agencies should endeavor to meet the two-year goal . . . .'').

studies and environmental analyses in the NEPA process and when agencies would need to supplement such studies and analyses. These revisions include updates to the provisions on programmatic reviews (§ 1502.4(d)) and tiering (§ 1501.11) to make clear, among other things, that site-specific analyses need not be conducted prior to an irretrievable commitment of resources, which in most cases will not be until the decision at the site-specific stage. CEQ also proposes to move the operative language from the definition of tiering in 40 CFR 1508.28 to § 1501.11(b).

In addition, CEQ proposes consistency edits to change ''broad'' and ''program'' to ''programmatic'' in §§ 1500.4(k), 1502.4(b), (c), and (d), and 1506.1(c). Further revisions to § 1502.4(b), including eliminating reference to programmatic EISs that ''are sometimes required,'' are intended to focus the provision on the discretionary use of programmatic EISs in support of clearly defined decision-making purposes. As CEQ stated in its 2014 guidance, programmatic NEPA reviews ''should result in clearer and more transparent decision[ ]making, as well as provide a better defined and more expeditious path toward decisions on proposed actions.'' [68] Other statutes or regulations define circumstances under which a programmatic EIS is required. *See, e.g.,* National Forest Management Act, 16 U.S.C. 1604(g). Finally, CEQ proposes a consistency edit in § 1502.4(c)(3) to revise the mandatory language to be discretionary since the regulations do not require programmatic EISs.

D. Proposed Revisions to Environmental Impact Statements (EISs) (Part 1502)

The most extensive level of NEPA analysis is an EIS, which is the ''detailed statement'' required under section 102(2)(C) of NEPA. When an agency prepares an EIS, it typically issues a ROD at the conclusion of the NEPA review. 40 CFR 1505.2. Based on the Environmental Protection Agency (EPA) weekly Notices of Availability published in the **Federal Register** between 2010 and 2018, Federal agencies published approximately 170 final EISs per year. CEQ proposes to update the format, page length, and timeline to complete EISs to better achieve the purposes of NEPA. CEQ also proposes several changes to streamline, provide flexibility, and improve the preparation of EISs. CEQ includes provisions in part 1502 to promote informed decision making by agencies and to inform the public about the decision-making process. The proposed regulations continue to encourage application of NEPA early in the process and early engagement with applicants for non-Federal projects (proposed § 1502.5(b)).

1. Page Limits (§ 1502.7)

In response to the ANPRM, CEQ received many comments on the length, complexity, and readability of environmental documents, and many suggestions for more meaningful page limits. The core purpose of page limits from the original regulations remains—documents must be a reasonable length in a readable format so that it is practicable for the decision maker to read and understand the document in a reasonable period of time. Therefore, CEQ proposes to reinforce the page limits for EISs set forth in § 1502.7, while allowing a senior agency official to approve a statement exceeding 300 pages when it is useful to the decision-making process. As captured in CEQ's report on the length of final EISs, these documents average over 600 pages. *See* Length of Environmental Impact Statements, *supra* note 34. While the length of an EIS will vary based on the complexity and significance of the proposed action and environmental effects the EIS considers, every EIS must be bounded by the practical limits of the decision maker's ability to consider detailed information. CEQ proposes this change to ensure that agencies develop EISs focused on significant effects and on the information useful to the decision makers and the public to more successfully implement NEPA.

CEQ intends for senior agency officials to take responsibility for the quantity, quality, and timelines of environmental analyses developed in support of the decisions of their agencies. Therefore, the senior agency official approving an EA or EIS in excess of the page limits should ensure that the final environmental document meets the informational needs of the agency's decision maker. For example, the agency decision makers may have varying levels of capacity to consider the information presented in the environmental document. In ensuring that the agency provides the resources necessary to implement NEPA, in accordance with 40 CFR 1507.2, senior agency officials should ensure that agency staff have the resources and competencies necessary to produce timely, concise, and effective environmental documents.

2. Draft, Final and Supplemental Statements (§ 1502.9)

CEQ proposes to include sub-headings in § 1502.9, ''Draft, final, and supplemental statements,'' to improve readability. CEQ proposes edits to paragraph (b) for clarity, replacing ''revised draft'' with ''supplemental draft.''

CEQ also received many comments requesting clarification regarding when supplemental statements are required. CEQ proposes revisions to § 1502.9(d)(1) to clarify that agencies need to update environmental documents when there is new information or a change in the proposed action only if a major Federal action remains to occur and other requirements are met. This proposed revision is consistent with Supreme Court case law holding that a supplemental EIS is required only ''[i]f there remains 'major Federal actio[n]' to occur, and if the new information is sufficient to show that the remaining action will 'affec[t] the quality of the human environment' in a significant manner or to a significant extent not already considered . . . .'' *Marsh,* 490 U.S. at 374 (quoting 42 U.S.C. 4332(2)(C)); *see also Norton* v. *S. Utah Wilderness All.,* 542 U.S. 55, 73 (2004). For example, supplementation might be triggered after an agency executes a grant agreement but before construction is complete because the agency has yet to provide all of the funds under that grant agreement. On the other hand, when an agency issues a final rule establishing a regulatory scheme, there is no remaining action to occur, and therefore supplementation is not required. If there is no further agency action after the agency's decision, supplementation does not apply because the Federal agency action is complete. *S. Utah Wilderness All.,* 542 U.S. at 73 (''although the '*[a]pproval* of a [land use plan]' is a 'major Federal action' requiring an EIS . . . that action is completed when the plan is approved. . . . There is no ongoing 'major Federal action' that could require supplementation (though BLM *is* required to perform additional NEPA analyses if a plan is amended or revised . . . .)'') (emphasis in original).

In order to determine whether a supplemental analysis is required, a new paragraph (c)(4) would provide that an agency may document its determination of whether a supplemental analysis is required consistent with its agency NEPA procedures or may, although it is not required, do so in an EA. This provision would codify the existing practice of several Federal agencies, such as the

[68] Programmatics Guidance, *supra* note 20, at 7.

Department of Transportation's reevaluation provided for highway, transit, and railroad projects (23 CFR 771.129); the Bureau of Land Management's Determination of NEPA Adequacy (Department of the Interior Departmental Manual, Part 516, Chapter 11, § 11.6); and the U.S. Army Corps of Engineers' Supplemental Information Report (section 13(d) of Engineering Regulation 200–2–2).

3. EIS Format (§§ 1502.10 and 1502.11)

CEQ proposes to revise § 1502.10, ''Recommended format,'' to provide agencies with more flexibility in formatting an EIS given that most EISs are prepared and distributed electronically. Specifically, CEQ proposes to eliminate the requirement to have a list of agencies, organizations and persons to whom copies of the EIS are sent since EISs are published online, and an index, as this is no longer necessary when most documents are produced in an electronically searchable format. This section would also allow agencies to use a different format so that they may customize EISs to address the particular proposed action and better integrate environmental considerations into agency decision-making processes.

CEQ proposes to amend § 1502.11, ''Cover,'' to remove the reference to a ''sheet'' since agencies prepare EISs electronically. CEQ also proposes to add a requirement to include the estimated cost of preparing the EIS to the cover in new paragraph (g) to provide transparency to the public on the costs of EIS-level NEPA reviews. To track costs, agencies must prepare an estimate of environmental review costs, including costs of the agency's full-time equivalent (FTE) personnel hours, contractor costs, and other direct costs related to the environmental review of the proposed action.[69] For integrated documents where an agency is preparing a document pursuant to multiple environmental statutory requirements, it may indicate that the estimate reflects costs associated with NEPA compliance as well as compliance with other environmental review and authorization requirements. Agencies can develop methodologies for preparing these cost estimates in their implementing procedures.

This amendment will address the concerns raised by the U.S. Government Accountability Office that agencies are not tracking the costs of NEPA analyses, as well as the many comments CEQ received from stakeholders regarding the costs associated with development of NEPA analyses.[70] Including such costs on the cover sheet would also be consistent with current OMB direction to Federal agencies to track costs of environmental reviews and authorizations for major infrastructure projects pursuant to E.O. 13807 and would provide the public with additional information regarding EIS-level NEPA documents.

4. Purpose and Need (§ 1502.13)

CEQ received a number of comments in response to the ANPRM recommending that CEQ better define the requirements for purpose and need statements. The current CEQ regulations require that an EIS ''briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.'' 40 CFR 1502.13.

The focus of the purpose and need statement is the purpose and need for the proposed action, and agencies should develop it based on consideration of the relevant statutory authority for the proposed action. The purpose and need statement also provides the framework in which ''reasonable alternatives'' to the proposed action will be identified. CEQ has advised that this discussion of purpose and need should be concise (typically one or two paragraphs long) and that the lead agency is responsible for its definition. *See* Connaughton Letter, *supra* note 23 (''Thoughtful resolution of the purpose and need statement at the beginning of the process will contribute to a rational environmental review process and save considerable delay and frustration later in the decision[-]making process.''). ''In situations involving two or more agencies that have a decision to make for the same proposed action and responsibility to comply with NEPA or a similar statute, it is prudent to jointly develop a purpose and need statement that can be utilized by both agencies. An agreed-upon purpose and need statement at this stage can prevent problems later that may delay completion of the NEPA process.'' *Id.* The lead agency is responsible for developing the purpose and need, and cooperating agencies should give deference to the lead agency and identify any substantive concerns early in the process to ensure swift resolution. *See* OFD Framework Guidance, § VIII.A.5 and XII, *supra* note 27, and Connaughton Letter, *supra* note 23.

Consistent with CEQ guidance and in response to comments, CEQ proposes to revise § 1502.13, ''Purpose and need,'' to clarify that the statement should focus on the purpose and need for the proposed action. In particular, CEQ proposes to strike ''to which the agency is responding in proposing the alternatives including'' to focus on the proposed action. CEQ further proposes, as discussed below, to address the relationship between the proposed action and alternatives in the definition of reasonable alternatives and other sections that refer to alternatives. Additionally, CEQ proposes to add a sentence to clarify that when an agency is responsible for reviewing applications for authorizations, the agency shall base the purpose and need on the applicant's goals and the agency's statutory authority. This addition is consistent with the proposed definition of reasonable alternatives, which must meet the goals of the applicant, where applicable.

5. Alternatives (§ 1502.14)

CEQ also received many comments requesting clarification regarding ''alternatives'' under the regulations. This section of an EIS should describe the proposed action and alternatives in comparative form, including their environmental impacts, such that the decision maker and the public can understand the basis for choice. However, as explained in § 1502.16 and reinforced by Question 7 of the Forty Questions, *supra* note 10, this section of the EIS should not duplicate the affected environment and environmental consequences sections, and agencies have flexibility to combine these three sections in a manner that clearly sets forth the basis for decision making. CEQ proposes a few changes to § 1502.14, ''Alternatives including the proposed action,'' to provide further clarity on the scope of the alternatives analysis in an EIS. CEQ proposes changes to § 1502.14 to simplify and clarify the language, and align it with the format of the related provisions of part 1502.

In paragraph (a), CEQ proposes to delete ''all'' before ''reasonable

[69] *See, e.g.,* U.S. Department of the Interior, Reporting Costs Associated with Developing Environmental Impact Statements (July 23, 2018), *https://www.doi.gov/sites/doi.gov/files/uploads/dep_sec_memo_07232018_-_reporting_costs_associated_w_developing_environmental_impact_statements.pdf.*

[70] In a 2014 report, the U.S. Government Accountability Office found that Federal agencies do not routinely track data on the cost of completing NEPA analyses, and that the cost can vary considerably, depending on the complexity and scope of the project. U.S. Gov't Accountability Office, GAO–14–370, NATIONAL ENVIRONMENTAL POLICY ACT: Little Information Exists on NEPA Analyses (Apr. 15, 2014), *https://www.gao.gov/products/GAO-14-370.* The report referenced the 2003 CEQ task force analysis referenced above which estimated that a typical EIS costs from $250,000 to $2 million. *See* NEPA Task Force Report, *supra* note 16, at p. 65.

alternatives'' and insert afterward ''to the proposed action.'' NEPA itself provides no specific guidance concerning the range of alternatives an agency must consider for each proposal. Section 102(2)(C), provides only that an agency should prepare a detailed statement addressing, among other things, ''alternatives to the proposed action.'' 42 U.S.C. 4332(2)(C). Section 102(2)(E) requires only that agencies ''study, develop, and describe appropriate alternatives to recommended courses of action.'' 42 U.S.C. 4332(2)(E) Implementing this limited statutory direction, CEQ has advised that ''[w]hen there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS.'' Question 1b, Forty Questions, *supra* note 10.

It is CEQ's view that NEPA's policy goals are satisfied when an agency analyzes reasonable alternatives, and that an EIS need not include every available alternative where the consideration of a spectrum of alternatives allows for the selection of any alternative within that spectrum. The reasonableness of the analysis of alternatives in a final EIS is resolved not by any particular number of alternatives considered, but by the nature of the underlying agency action. The discussion of environmental effects of alternatives need not be exhaustive, but must provide information sufficient to permit a reasoned choice of alternatives for the agency to evaluate available reasonable alternatives, 40 CFR 1502.14(a), including significant alternatives that are called to its attention by other agencies, organizations, communities, or a member of the public. Analysis of alternatives also may serve purposes other than NEPA compliance, such as evaluation of the least environmentally damaging practicable alternative for the discharge of dredged or fill material under section 404(b)(1) of the Clean Water Act, 33 U.S.C. 1344(b)(1).

The number of alternatives that is appropriate for an agency to consider will vary. For some actions, such as where the Federal agency's authority to consider alternatives is limited by statute, the range of alternatives may be limited to the proposed action and the no action alternative. For actions where the Federal authority to consider a range of alternatives is broad, the final EIS itself should consider a broader range of reasonable alternatives. However, a process of narrowing alternatives is in accord with NEPA's ''rule of reason'' and common sense—agencies need not reanalyze alternatives previously rejected, particularly when an earlier analysis of numerous reasonable alternatives was incorporated into the final analysis and the agency has considered and responded to public comment favoring other alternatives.

For consistency with this change, CEQ proposes to strike ''the'' before ''reasonable alternatives'' in § 1502.1, and amend § 1502.16, ''Environmental consequences,'' to clarify in proposed paragraph (a)(1) that the discussion must include the environmental impacts of the ''proposed action and reasonable alternatives.''

In response to CEQ's ANPRM, some commenters urged that the regulations should not require agencies to account for impacts over which the agency has no control, including those resulting from alternatives outside its jurisdiction. CEQ proposes to strike paragraph (c) of 40 CFR 1502.14 as a requirement for all EISs because it is not efficient or reasonable to require agencies to develop detailed analyses relating to alternatives outside the jurisdiction of the lead agency. This change is consistent with proposed § 1501.1(a)(2). Further, the proposed definition of ''reasonable alternatives'' would preclude alternatives outside the agency's jurisdiction because they would not be technically feasible due to the agency's lack of statutory authority to implement that alternative. However, an agency may discuss reasonable alternatives not within their jurisdiction when necessary for the agency's decision-making process such as when preparing an EIS to address legislative EIS requirements pursuant to § 1506.8 and to specific Congressional directives. *See* section II.H, *infra,* for further discussion.

A concern raised by many commenters is that agencies have limited resources and that it is important that agencies use those resources effectively. Analyzing a large number of alternatives, particularly where it is clear that only a few alternatives would be economically and technically feasible and realistically implemented by the applicant, can divert limited agency resources. CEQ invites comment on whether the regulations should establish a presumptive maximum number of alternatives for evaluation of a proposed action, or alternatively for certain categories of proposed actions. CEQ seeks comment on (1) specific categories of actions, if any, that should be identified for the presumption or for exceptions to the presumption; and (2) what the presumptive number of alternatives should be (*e.g.,* a maximum of three alternatives including the no action alternative).

6. Affected Environment and Environmental Consequences (§§ 1502.15 and 1502.16)

CEQ proposes in § 1502.15, ''Affected environment,'' to explicitly allow for combining of affected environment and environmental consequences sections to adopt what has become a common practice in some agencies. This revision would ensure that the description of the affected environment is focused on those aspects of the environment that are affected by the proposed action. In proposed paragraph (a)(1) of § 1502.16, ''Environmental consequences,'' CEQ proposes to consolidate into one paragraph the requirement to include a discussion of the effects of the proposed action and reasonable alternatives. The combined discussion should focus on those effects that are reasonably foreseeable and have a close causal relationship to the proposed action, consistent with the proposed revised definition of effects addressed in § 1508.1(g). To align with the statute, CEQ also proposes to add a new § 1502.16(a)(10) to provide that discussion of environmental consequences should include, where applicable, economic and technical considerations consistent with section 102(2)(B) of NEPA.

Further, CEQ proposes to move the operative language that addresses when agencies need to consider economic and social effects in EISs from the definition of human environment in 40 CFR 1508.14 to proposed § 1502.16(b). CEQ also proposes to amend the language for clarity, explain that the agency makes the determination of when consideration of economic and social effects are interrelated with natural or physical environmental effects at which point the agency should give appropriate consideration to those effects, and strike ''all of'' as unnecessary.

7. Submitted Alternatives, Information, and Analyses (§§ 1502.17 and 1502.18)

To ensure agencies have considered all alternatives, information, and analyses submitted by the public, including State, Tribal, and local governments as well as individuals and organizations, CEQ is proposing to add a requirement in § 1502.17 to include a new section in draft and final EISs. This section, called the ''Submitted alternatives, information and analyses'' section, would include a summary of all alternatives, information, and analyses submitted by the public for consideration by the lead and

cooperating agencies in both the draft and final EISs. In developing the summary, agencies may refer to other relevant sections of the draft or final EIS, or to appendices.

To improve the scoping process, CEQ proposes revisions to ensure agencies solicit and consider relevant information early in the development of the draft EIS. As discussed above, CEQ proposes to direct agencies to include a request for identification of alternatives, information, and analyses in the notice of intent (§ 1501.9(d)(7)) and require agencies to summarize all relevant alternatives, information, and analyses submitted by public commenters in the draft and final EIS. CEQ also proposes in § 1502.18, ''Certification of alternatives, information, and analyses section,'' that, based on the alternatives, information, and analyses section required under § 1502.17, the decision maker for the lead agency certify that the agency has considered such information and include the certification in the ROD under § 1505.2(d). In addition, CEQ proposes a conclusive presumption that the agency has considered information summarized in that section because, where agencies have followed the process outlined above, and identified and described information submitted by the public, it is reasonable to presume the agency has considered such information.

8. Other Proposed Changes to Part 1502

CEQ proposes to eliminate the option to circulate the summary of an EIS in § 1502.21, ''Publication of the environmental impact statement,'' given the change from circulation to publication and the reality that most EISs are produced electronically. CEQ proposes to strike the word ''always'' from § 1502.22(a) as unnecessarily limiting and eliminate 40 CFR 1502.22(c) addressing the applicability of the 1986 amendments to 40 CFR 1502.22, ''Incomplete or unavailable information,'' because this paragraph is obsolete. CEQ reiterates, as it stated in the promulgation of this regulation, that the term ''overall cost'' as used in § 1502.22 includes ''financial costs and other costs such as costs in terms of time (delay) and personnel.'' [71] CEQ also proposes in paragraphs (b) and (c) to replace the term ''exorbitant'' with ''unreasonable'' because ''unreasonable'' is more consistent with CEQ's original description of ''overall cost'' considerations, the common understanding of the term, and how the terminology has been interpreted in practice. CEQ invites comment on whether the ''overall costs'' of obtaining incomplete of unavailable information warrants further definition to address whether certain costs are or are not ''unreasonable.''

A proposed revision to § 1502.24, ''Methodology and scientific accuracy,'' would clarify that agencies should use reliable existing information and resources and are not required to undertake new scientific and technical research to inform their analyses. The phrase ''new scientific and technical research'' is intended to distinguish separate and additional research that extends beyond existing scientific and technical information available in the public record or in publicly available academic or professional sources. This phrase is consistent with the requirement in § 1502.22 to obtain incomplete or unavailable information regarding significant adverse effects if the means of obtaining the information is known and the cost to the decision-making process is not unreasonable. Agencies should use their experience and expertise to determine what scientific and technical information is needed to inform their analyses and decision making. CEQ also proposes to revise § 1502.24 to allow agencies to draw on any source of information (such as remote sensing and statistical modeling) that the agency finds reliable and useful to the decision-making process. These changes would promote the use of reliable data, including information gathered using current technologies. Finally, CEQ proposes to revise § 1502.25, ''Environmental review and consultation requirements,'' to clarify that agencies must, to the fullest extent possible, integrate their NEPA analysis with all other applicable Federal environmental review laws and Executive Orders in furtherance of the OFD policy and to make the environmental review process more efficient.[72]

E. Proposed Revisions To Commenting on Environmental Impact Statements (Part 1503)

CEQ proposes to modernize part 1503 given the existence of current technologies not available at the time of the 1978 regulations. In particular, the proposed regulations would encourage agencies to use the current methods of electronic communication both to publish important environmental information and to structure public participation for greater efficiency and inclusion of interested persons. CEQ proposes to revise § 1503.1, ''Inviting comments and requesting information and analyses,'' in proposed paragraph (a)(2)(v) to give agencies flexibility in the public involvement process to solicit comments ''in a manner designed to inform'' parties interested or affected ''by the proposed action.'' CEQ also proposes a new paragraph (a)(3) that requires agencies to specifically invite comment on the completeness of the submitted alternatives, information and analyses section (§ 1502.17). Because interested parties have an affirmative duty to comment during the public review period in order for the agency to consider their positions, *see Vt. Yankee,* 435 U.S. at 553, proposed paragraph (c) would require agencies to provide for commenting using electronic means while ensuring accessibility to those who may not have such access to ensure adequate notice and opportunity to comment.

CEQ also proposes a revision to § 1503.2, ''Duty to comment,'' to clarify that when a cooperating agency with jurisdiction by law specifies measures it considers necessary for a regulatory approval, it should cite its applicable statutory authority to ensure this information is made known to the lead agency.

Further, CEQ proposes to revise paragraph (a) of § 1503.3, ''Specificity of comments and information,'' to explain that the purposes of comments is to promote informed decision making and further clarify that comments should provide sufficient detail for the agency to consider the comment in its decision-making process. *See Pub. Citizen,* 541 U.S. at 764; *Vt. Yankee,* 435 U.S. at 553 (while ''NEPA places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action, it is still incumbent upon [parties] who wish to participate to structure their participation so that it is meaningful, so that it alerts the agency to the [parties'] position . . . .''). CEQ also proposes that comments should explain why the issue raised is significant to the consideration of potential environmental impacts and alternatives to the proposed action, as well as economic and employment impacts, and other impacts affecting the quality of the environment. *See Vt. Yankee,* 435 U.S. at 553 (''[Comments] must be significant enough to step over a threshold requirement of materiality before any lack of agency response or consideration becomes a concern. The comment cannot merely state that a particular

[71] 51 FR at 15622 (Apr. 25, 1986).

[72] The Permitting Council has compiled a list of environmental laws and Executive Orders that may apply to a proposed action. *See* Federal Environmental Review and Authorization Inventory, *https://www.permits.performance.gov/tools/federal-environmental-review-and-authorization-inventory.*

mistake was made . . . ; it must show why the mistake was of possible significance in the results . . . .'' (quoting *Portland Cement Assn.* v. *Ruckelshaus,* 486 F.2d 375, 394 (1973), cert. denied *sub nom. Portland Cement Corp.* v. *Administrator, EPA,* 417 U.S. 921 (1974))). CEQ also proposes a new § 1503.3(b) to emphasize that comments on the submitted alternatives, information and analyses section should identify any additional alternatives, information or analyses not included in the draft EIS, and should be as specific as possible.

Finally, section 102(2)(C) of NEPA requires that agencies obtain views of Federal agencies with jurisdiction by law or expertise with respect to any environmental impact, and also directs that agencies make copies of the environmental impact statement and the comments and views of appropriate Federal, State, and local agencies available to the President, CEQ and the public. 42 U.S.C. 4332(2)(C). Part 1503 of the CEQ regulations include provisions relating to inviting and responding to comments. In practice, the processing of comments can require substantial time and resources. CEQ proposes to amend § 1503.4, ''Response to comments,'' to simplify and clarify in paragraph (a) that agencies are required to consider substantive comments timely submitted during the public comment period. CEQ also proposes to clarify that an agency may respond to comments individually or collectively. Consistent with this revision, CEQ proposes additionally to clarify that in the final EIS, agencies may respond by a variety of means, and to strike the detailed language in paragraph (a)(5) relating to comments that do not warrant further agency response.

CEQ also proposes to clarify in paragraph (b) that agencies must append comment responses to EISs rather than including them in the body of the EIS, or otherwise publish them. Under current practice, some agencies include these comment responses in the EISs themselves, which can contribute to excessive length. *See* Length of Environmental Impact Statements, *supra* note 34. These changes would not preclude an agency from summarizing or discussing specific comments in the EIS as well.

F. Proposed Revisions to Pre-Decisional Referrals to the Council of Proposed Federal Actions Determined To Be Environmentally Unsatisfactory (Part 1504)

Section 309 of the Clean Air Act (42 U.S.C. 7609) requires the Environmental Protection Agency (EPA) to review and comment on certain proposed actions of other Federal agencies and to make those comments public. Where appropriate, EPA may exercise its authority under section 309(b) of the Clean Air Act and refer the matter to CEQ. CEQ's regulations addressing this referral process are set forth in part 1504.

CEQ proposes edits to part 1504, ''Pre-decisional Referrals to the Council of Proposed Federal Actions Determined to be Environmentally Unsatisfactory,'' to improve clarity and to add EAs. Though infrequent, CEQ has received referrals on EAs and proposes to capture this practice in the regulations.

CEQ proposes additional revisions to ensure a more timely and efficient process. Consistent with the statute, CEQ proposes to add economic and technical considerations to paragraph (g) of § 1504.2, ''Criteria for referrals.'' In § 1504.3, ''Procedure for referrals and response,'' CEQ proposes changes to simplify and modernize the process. CEQ also proposes a minor revision to the title of part 1504, striking ''Predecision'' and inserting ''Pre-decisional.''

G. Proposed Revisions to NEPA and Agency Decision Making (Part 1505)

CEQ proposes minor edits to part 1505 for clarity. CEQ proposes to move 40 CFR 1505.1, ''Agency decisionmaking procedures,'' to § 1507.3(b), as discussed further below. CEQ proposes to clarify in the introductory paragraph of § 1505.2, ''Record of decision in cases requiring environmental impact statements,'' in cases requiring EISs, that agencies must ''timely publish'' their RODs. This paragraph also would clarify that ''joint'' RODs by two or more Federal agencies are permitted; this change is also consistent with the OFD policy and E.O. 13807. Finally, CEQ proposes edits in paragraph (c) to change from passive to active voice for clarity.

H. Proposed Revisions to Other Requirements of NEPA (Part 1506)

CEQ proposes a number of edits to part 1506 to improve the NEPA process to make it more efficient and flexible, especially where actions involve third-party applicants. CEQ also proposes several edits for clarity.

In particular, CEQ proposes to add FONSIs to paragraph (a) of § 1506.1, ''Limitations on actions during NEPA process,'' to clarify existing practice and judicial determinations that the limitation on actions applies when an agency is preparing an EA as well as an EIS. CEQ proposes to consolidate paragraph (d) with paragraph (b) and revise the language to provide additional clarity on what activities are allowable during the NEPA process. Specifically, CEQ proposes to eliminate reference to a specific agency in paragraph (d), and provide in paragraph (b) that this section does not preclude certain activities by an applicant to support an application of Federal, State, Tribal or local permits or assistance. As an example of activities an applicant may undertake, CEQ proposes to add ''acquisition of interests in land,'' which would include acquisitions of rights-of-way and conservation easements. CEQ invites comment on whether it should make any additional changes to § 1506.1, including whether there are circumstances under which an agency may authorize irreversible and irretrievable commitments of resources.

A revision to § 1506.2, ''Elimination of duplication with State, Tribal, and local procedures,'' would acknowledge the increasing number of State, Tribal, and local governments conducting NEPA reviews pursuant to assignment from Federal agencies. *See, e.g.,* 23 U.S.C. 327, 25 U.S.C. 4115 and 5389(a). The revision in paragraph (a) would clarify that Federal agencies are authorized to cooperate with such State, Tribal, and local agencies and must do so to reduce duplication under paragraph (b). CEQ proposes to add examples to paragraph (b) to encourage use of prior reviews and decisions. CEQ proposes to modify paragraph (c) to give agencies flexibility to determine whether to cooperate in fulfilling State, Tribal, or local EIS or similar requirements. Finally, CEQ proposes to clarify in paragraph (d) that NEPA does not require reconciliation of inconsistencies between the proposed action and State, Tribal or local plans or laws, although the EIS should discuss the inconsistencies. These revisions would promote efficiency and reduce duplication between Federal and State, Tribal, and local requirements. Other commenters noted that this provision continues to serve an important role given the increased numbers of non-Federal agencies assuming NEPA responsibilities from a Federal agency.

Consistent with current practice by many agencies, the proposed regulations would expand § 1506.3, ''Adoption,'' to expressly cover EAs as well as EISs. CEQ also proposes edits throughout to clarify the process for documenting adoption and the subsequent decision. Finally, paragraph (f) would allow an agency to adopt another agency's determination to apply a CE to a proposed action if the adopting agency's proposed action is substantially the same action. To allow agencies to use

one another's CEs more generally, CEQ also proposes revisions to § 1507.3(e)(5), which would allow agencies to establish a process in their NEPA procedures to adopt another agency's CE.

CEQ also proposes to amend § 1506.4, ''Combining documents,'' to encourage agencies ''to the fullest extent practicable'' to combine their environmental documents with other agency documents to reduce duplication and paperwork. For example, the U.S. Forest Service routinely combines EISs with forest management plans, and agencies may use their NEPA documents to satisfy compliance with section 106 of the National Historic Preservation Act under 36 CFR 800.8.

In response to the ANPRM, commenters urged CEQ to allow greater flexibility for the project sponsor (including private entities) to participate in the preparation of the NEPA documents under the supervision of the lead agency. An update to § 1506.5, ''Agency responsibility for environmental documents,'' would give agencies more flexibility with respect to the preparation of environmental documents while continuing to require agencies to independently evaluate and take responsibility for those documents. Applicants and contractors would be able to assume a greater role in contributing information and material to the preparation of environmental documents, subject to the supervision of the agency. However, agencies would remain responsible for taking reasonable steps to ensure the accuracy of information prepared by applicants and contractors. If a contractor or applicant prepares the document, paragraph (c)(1) would require the decision-making agency official to provide guidance, participate in the preparation, independently evaluate the statement, and take responsibility for its content. These changes are intended to improve communication between proponents of a proposal for agency action and the officials tasked with evaluating the effects of the action and reasonable alternatives, to improve the quality of NEPA documents and efficiency of the NEPA process.

CEQ also proposes to update § 1506.6, ''Public involvement,'' to give agencies greater flexibility to design and customize public involvement to best meet the specific circumstances of their proposed actions. Proposed revisions to paragraph (b)(2) would clarify that agencies may notify any organizations that have requested regular notice. Proposed paragraph (b)(3)(x) would provide for notice through electronic media, but clarify that agencies may not limit public notification to solely electronic methods for actions occurring in whole or in part in areas without high-speed internet access, such as rural locations. CEQ also proposes to amend paragraph (f), which requires that EISs, comments received, and any underlying documents be made available to the public pursuant to the Freedom of Information Act (FOIA) by updating the reference to FOIA, which has been amended numerous times since the enactment of NEPA, mostly recently by the FOIA Improvement Act of 2016, Public Law 114–185. Further, CEQ proposes to strike the remaining text to align paragraph (f) with the text of section 102(2)(C) of NEPA, including with regard to fees. CEQ also proposes to update and modernize § 1506.7, ''Further guidance,'' to state that CEQ may provide further guidance concerning NEPA and its procedures consistent with applicable Executive Orders.

CEQ proposes to consolidate the legislative EIS requirements from the definition of legislation in the current 40 CFR 1508.17 into § 1506.8, ''Proposals for legislation,'' and revise the provision for clarity. Agencies prepare legislative EISs for Congress when they are proposing specific actions such as a legislative proposal for the withdrawal of public lands for military use. *See, e.g.,* Nevada Test and Training Range Military Land Withdrawal Legislative Environmental Impact Statement, Environmental Impact Statements; Notice of Availability, 83 FR 54105 (Oct. 26, 2018).

CEQ also invites comment on whether the legislative EIS requirement should be eliminated or modified because the President proposes legislation, and therefore it is inconsistent with the Recommendations Clause of the U.S. Constitution, which provides the President shall recommend for Congress' consideration ''such [m]easures as he shall judge necessary and expedient . . . .'' U.S. Constitution, Art. II, § 3. The President is not a Federal agency, 40 CFR 1508.12, and the proposal of legislation by the President is not an agency action. *Franklin* v. *Mass.,* 505 U.S. 788, 800–01 (1992).

CEQ also proposes to add a new § 1506.9, ''Proposals for regulations,'' to address the analyses required for rulemakings. This section would clarify that analyses prepared pursuant to other statutory or Executive Order requirements may serve as the functional equivalent of the EIS and be sufficient to comply with NEPA. CEQ proposes in § 1507.3(b)(6) to allow agencies to identify in their agency NEPA procedures documents prepared pursuant to other statutory requirements or Executive Orders that meet the requirements of NEPA.

For some rulemakings, agencies conduct a regulatory impact analysis (RIA), pursuant to E.O. 12866, ''Regulatory Planning and Review,'' [73] that assesses regulatory impacts to air and water quality, ecosystems, and animal habitat, among other environmental factors. E.O. 12866, § 6(a)(3)(C)(i)–(ii). An RIA, alone or in combination with other documents, may serve the purposes of the EIS if (1) there are substantive and procedural standards that ensure full and adequate consideration of environmental issues; (2) there is public participation before a final alternative is selected; and (3) a purpose of the review that the agency is conducting is to examine environmental issues. CEQ proposes § 1506.9 to promote efficiency and reduce duplication in the assessment of regulatory proposals.

The analyses must address the detailed statement requirements specified in section 102(2)(C) of NEPA. More specifically, when those analyses address environmental effects, alternatives, the relationship between short-term uses and long-term productivity, and any irreversible commitments of resources, these analyses may serve as functional equivalents for an EIS. Further, these analyses must balance a clear and express environmental protection purpose with any other variables under consideration, such as economic needs. Finally, that balance must anticipate the advantages and disadvantages of the preparation of a separate EIS.

CEQ invites comments on additional analyses agencies are already conducting that, in whole or when aggregated, can serve as the functional equivalent of the EIS. Aspects of the E.O. 12866 cost benefit analysis may naturally overlap with aspects of the EIS.

CEQ also proposes to update § 1506.10, ''Filing requirements,'' to remove the obsolete process for filing paper copies of EISs with EPA and EPA's delivery of a copy to CEQ, and instead provide for electronic filing, consistent with EPA's procedures. This proposed change would provide flexibility to adapt as EPA changes its processes.

A proposed clause in paragraph (b) would acknowledge the statutory requirement of some agencies to issue a combined final EIS and ROD. *See* 23 U.S.C. 139(n)(2) and 49 U.S.C. 304a(b). Proposed paragraph (c) addresses when

[73] 58 FR 51735 (Oct. 4, 1993).

agencies may make an exception to the current rules set forth in paragraph (b) on timing for issuing a ROD.

Over the last 40 years, CEQ has developed significant experience with NEPA in the context of emergencies and disaster recoveries. Actions following Hurricanes Katrina, Harvey, and Michael, as well as catastrophic wildfires, have given CEQ the opportunity to explore a variety of circumstances where alternative arrangements for complying with NEPA are necessary. CEQ proposes to amend § 1506.12, ''Emergencies,'' to clarify that alternative arrangements are still meant to comply with section 102(2)(C)'s requirement for a ''detailed statement.'' This amendment is consistent with CEQ's longstanding position that it has no authority to exempt Federal agencies from compliance with NEPA, but that CEQ can appropriately provide for exceptions to specific requirements of CEQ's regulations implementing the procedural provisions of NEPA to address extraordinary circumstances that are not addressed by agency implementing procedures previously approved by CEQ. *See* Emergencies Guidance, *supra* note 19. CEQ maintains a public description of all pending and completed alternative arrangements on its website.[74]

Finally, CEQ proposes to modify § 1506.13, ''Effective date,'' to clarify that this regulation would apply to all NEPA processes begun after the effective date, but agencies have the discretion to apply it to ongoing reviews. CEQ also proposes to remove the 1979 effective date of the current regulations and the reference to the 1973 guidance in the current paragraph (a) and strike the current paragraph (b) regarding actions begun before January 1, 1970 because they are obsolete.

I. Proposed Revisions to Agency Compliance (Part 1507)

CEQ proposes modifications to part 1507, which addresses agency compliance with NEPA. The proposed changes would consolidate provisions relating to agency procedures from elsewhere in the CEQ regulations, and add a new section to address the dissemination of information about agency NEPA programs. A proposed change to § 1507.1, ''Compliance,'' would strike the second sentence for consistency with changes to the provisions for agency NEPA procedures at § 1507.3. A proposed change to paragraph (a) of § 1507.2, ''Agency capability to comply,'' would make the senior agency official responsible for coordination, communication, and compliance with NEPA, including resolving implementation issues and representing the agency analysis of the effects of agency actions on the human environment in agency decision-making processes. The proposed § 1507.2(a) would make the senior agency official responsible for addressing disputes among lead and cooperating agencies and enforcing page and time limits. The senior agency official would be responsible for ensuring all environmental documents—even exceptionally lengthy ones—are provided to Federal agency decision makers in a timely, readable, and useful format. CEQ also proposes to clarify in the introductory paragraph that in NEPA compliance an agency may use the ''the resources of other agencies, applicants, and other participants in the NEPA process,'' for which the agency should account. CEQ proposes to amend paragraph (c) to emphasize agency cooperation, which would include commenting. Finally, CEQ proposes to add references to E.O. 11991, which amended E.O. 11514, and E.O. 13807 in paragraph (f) to codify agencies' responsibility to comply with the Order.

In developing their procedures, agencies should strive to identify and apply efficiencies, such as use of applicable CEs, adoption of prior NEPA analyses, and incorporation by reference to prior relevant Federal, State, Tribal, and local analyses, wherever practicable. To facilitate effective and efficient procedures, CEQ proposes to consolidate all of the requirements for agency NEPA procedures in § 1507.3 and add a new § 1507.4 to provide the means of publishing information on ongoing NEPA reviews and agency records relating to NEPA reviews. This includes moving the provisions in § 1505.1, ''Agency decision making procedures,'' to proposed § 1507.3(b); moving the requirement to provide for extraordinary circumstances currently in 40 CFR 1508.4 to proposed § 1507.3(d)(2)(ii); moving the requirement to adopt procedures for introducing a supplement into the agency's administrative record from 40 CFR 1502.9(d)(3) to proposed § 1507.3(d)(3); and moving the allowance to combine the agency's EA process with its scoping process from 40 CFR 1501.7(b)(3) to proposed § 1507.3(e)(4).

CEQ also proposes several revisions to § 1507.3. Revised paragraph (a) would provide agencies the later of 1 year after publication of the final rule or 9 months after the establishment of an agency to develop or revise proposed agency NEPA procedures, as necessary, to implement the CEQ regulations. CEQ also proposes to eliminate the limitations on paraphrasing the CEQ regulations. Agency NEPA procedures should set forth the process by which agencies will comply with NEPA and the CEQ regulations in the context of their particular programs and processes. In addition, CEQ proposes to clarify that except as otherwise provided by law or for agency efficiency, agency NEPA procedures shall not impose additional procedures or requirements beyond those set forth in the CEQ regulations.

CEQ proposes to subdivide paragraph (a) into subparagraphs (1) and (2) for additional clarity because each of these is an independent requirement. CEQ proposes to eliminate the recommendation to agencies to issue explanatory guidance and the requirement to review their policies and procedures because the responsibility to revise procedures would be addressed in paragraph (a).

Consistent with the proposed edits to § 1500.1, CEQ proposes to revise paragraph (b) to clarify that agencies should ensure decisions are made in accordance with the Act's procedural requirements and policy of integrating NEPA with other environmental reviews to promote efficient and timely decision making. CEQ proposes a new paragraph (b)(6) to encourage agencies to set forth in their NEPA procedures requirements to combine their NEPA documents with other agency documents, especially where the same or similar analyses are required for compliance with other requirements. Many agencies implement statutes that call for consideration of alternatives to the agency proposal, including the no action alternative, the effects of the agencies' proposal and alternatives, and public involvement. Agencies can use their NEPA procedures to align compliance with NEPA and these other statutory authorities, including provisions for page and time limits that integrate NEPA's goals for informed decision making with agencies' specific statutory requirements. This approach is consistent with some agency practice, but more agencies could use it to achieve greater efficiency and reduce unnecessary duplication. *See, e.g.,* 36 CFR part 220 (U.S. Forest Service NEPA procedures).

Under the proposed § 1507.3(b)(6), agencies may document any agency determination that compliance with the environmental review requirements of other statutes or Executive Orders serves as the functional equivalent of NEPA compliance by identifying that (1) there are substantive and procedural

[74] *https://ceq.doe.gov/nepa-practice/alternative_arrangements.html.*

standards that ensure full and adequate consideration of environmental issues; (2) there is public participation before a final alternative is selected; and (3) a purpose of the review that the agency is conducting is to examine environmental issues. While the courts have found that EPA need not conduct NEPA analyses under a number of statutes that are ''functionally equivalent,'' including the Clean Air Act, the Ocean Dumping Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act, CEQ proposes that the concept of functional equivalency be extended to other agencies that conduct analyses to examine environmental issues.

Furthermore, CEQ proposes to add a new paragraph (c), which would provide that agencies may identify actions that are not subject to NEPA in their agency NEPA procedures, including (1) non-major Federal actions; (2) non-discretionary actions, in whole or in part; (3) actions expressly exempt from NEPA under another statute; (4) actions for which compliance with NEPA would clearly and fundamentally conflict with the requirements of another statute; and (5) actions for which compliance with NEPA would be inconsistent with Congressional intent due to the requirements of another statute. These changes would conform to the new § 1501.1, ''NEPA threshold applicability analysis,'' section, which provides five considerations in determining whether NEPA applies to a proposed action.

CEQ proposes to amend paragraph (d)(2)(ii) to require agencies to identify in their procedures when documentation of a CE determination is required. CEQ proposes to add language to paragraph (e)(3) to codify existing agency practice to publish notices when it pauses an EIS or withdraws an NOI. Finally, CEQ proposes to add a new paragraph (e)(5) that would allow agencies to establish a process in their agency NEPA procedures whereby the agency may apply a CE listed in another agency's NEPA procedures. Such procedure would set forth the process by which the agency would consult with the agency that listed the CE in its NEPA procedures to ensure that the application of the CE is consistent with the originating agency's intent and practice.

CEQ invites comment on whether it should specifically allow an agency to apply a categorical exclusion established in another agency's NEPA procedures to its proposed action. CEQ invites comment on any process its regulations should include to ensure the appropriate application of an agency's CE to another agency's action.

Finally, the proposed § 1507.4, ''Agency NEPA program information,'' would require agencies in their NEPA implementing procedures to provide for a website or other means of publishing certain information on ongoing NEPA reviews and maintaining and permitting public access to agency records relating to NEPA reviews. This provision would promote transparency and efficiency in the NEPA process, and improve interagency coordination by ensuring that information is more readily available to other agencies and the public.

Opportunities exist for agencies to combine existing geospatial data, including remotely sensed images, and analyses to streamline environmental review and better coordinate development of environmental documents for multi-agency projects, consistent with the OFD policy. One option involves creating a single NEPA application that facilitates consolidation of existing datasets and can run several relevant geographic information system (GIS) analyses to help standardize the production of robust analytical results. This application could have a public-facing component modeled along the lines of EPA's NEPAssist,[75] which would aid prospective project sponsors with site selection and project design and increase public transparency. The application could link to the Permitting Dashboard to help facilitate project tracking and flexibilities under §§ 1506.5 and 1506.6. CEQ invites comment on this proposal, including comment on whether additional regulatory changes could help facilitate streamlined GIS analysis to help agencies comply with NEPA.

J. Proposed Revisions to Definitions (Part 1508)

CEQ proposes significant revisions to part 1508. CEQ proposes to clarify the definitions of a number of key NEPA terms in order to reduce ambiguity, both through modification of existing definitions and the addition of new definitions. CEQ also proposes to eliminate individual section numbers for each term in favor of an alphabetical list of defined terms in the revised § 1508.1. CEQ proposes conforming edits to remove citations to the specific definition sections throughout the proposed rule. Finally, CEQ proposes to move the operative language included throughout the definitions sections to the relevant substantive sections of the regulations.

New definition of ''authorization.'' CEQ proposes to define the term ''authorization'' to refer to the types of activities that might be required for permitting a proposed action, in particular infrastructure projects. This definition is consistent with the definition included in FAST–41 and E.O. 13807.

Clarifying the meaning of ''categorical exclusion.'' CEQ proposes to revise the definition of categorical exclusion by inserting ''normally'' to clarify that there may be situations where an action may have significant effects on account of extraordinary circumstances. CEQ also proposes to strike ''individually or cumulatively'' for consistency with the proposed revisions to the definition of ''effects'' discussed below. CEQ proposes conforming edits in §§ 1500.4(a) and 1500.5(a). As noted in section II.I, CEQ proposes to move the requirement to provide for extraordinary circumstances in agency procedures to § 1507.3(d)(2)(ii).

Clarifying the meaning of ''cooperating agency.'' CEQ proposes to amend the definition of cooperating agency to make clear that a State, Tribal, or local agency may be a cooperating agency when the lead agency agrees, and to move the corresponding operative language to proposed § 1501.8(a).

Clarifying the meaning of ''effects.'' Many commenters have urged CEQ to refine the definition of effects. Commenters raised concerns that the current definition creates confusion, and that the terms ''indirect'' and ''cumulative'' have been interpreted expansively resulting in excessive documentation about speculative effects and leading to frequent litigation. Commenters also have raised concerns that this has expanded the scope of NEPA analysis without serving NEPA's purpose of informed decision making. Commenters stressed that the focus of the effects analysis should be on those effects that are reasonably foreseeable, related to the proposed action under consideration, and subject to the agency's jurisdiction and control. Commenters also noted that NEPA practitioners often struggle with describing cumulative impacts despite numerous publications on the topic.

While NEPA refers to environmental impacts and environmental effects, it does not subdivide the terms into direct, indirect, or cumulative. To address commenters' concerns and reduce confusion and unnecessary litigation,

[75] *https://nepassisttool.epa.gov/nepassist/nepamap.aspx. See also* the Marine Cadastre, which provides consolidated GIS information for offshore actions, *https://marinecadastre.gov/.*

CEQ proposes to make amendments to simplify the definition of effects by consolidating the definition into a single paragraph and striking the specific references to direct, indirect, and cumulative effects.

In particular, CEQ proposes to amend the definition of effects to provide clarity on the bounds of effects consistent with the Supreme Court's holding in *Department of Transportation* v. *Public Citizen,* 541 U.S. at 767–68. Under the proposed definition, effects must be reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives; a ''but for'' causal relationship is insufficient to make an agency responsible for a particular effect under NEPA. This close causal relationship is analogous to proximate cause in tort law. *Id.* at 767; *see also Metro. Edison Co.,* 460 U.S. at 774 (interpreting section 102 of NEPA to require ''a reasonably close causal relationship between a change in the physical environment and the effect at issue'' and stating that ''[t]his requirement is like the familiar doctrine of proximate cause from tort law.''). CEQ seeks comment on whether to include in the definition of effects the concept that the close causal relationship is ''analogous to proximate cause in tort law,'' and if so, how CEQ could provide additional clarity regarding the meaning of this phrase.

CEQ proposes to strike the definition of cumulative impacts and strike the terms ''direct'' and ''indirect'' in order to focus agency time and resources on considering whether an effect is caused by the proposed action rather than on categorizing the type of effect. CEQ's proposed revisions to simplify the definition are intended to focus agencies on consideration of effects that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action. In practice, substantial resources have been devoted to categorizing effects as direct, indirect, and cumulative, which, as noted above, are not terms referenced in the NEPA statute.

In addition, CEQ proposes a change in position to state that analysis of cumulative effects, as defined in CEQ's current regulations, is not required under NEPA. While CEQ has issued detailed guidance on considering cumulative effects, categorizing and determining the geographic and temporal scope of such effects has been difficult and can divert agencies from focusing their time and resources on the most significant effects. Excessively lengthy documentation that does not focus on the most meaningful issues for the decision maker's consideration can lead to encyclopedic documents that include information that is irrelevant or inconsequential to the decision-making process. Instead, agencies should focus their efforts on analyzing effects that are most likely to be potentially significant and be effects that would occur as a result of the agency's decision. Agencies are not expected to conduct exhaustive research on identifying and categorizing actions beyond the agency's control. With this proposed change and the proposed elimination of the definition of cumulative impacts, it is CEQ's intent to focus agencies on analysis of effects that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action.

To further assist agencies in their assessment of significant effects, CEQ also proposes to clarify that effects should not be considered significant if they are remote in time, geographically remote, or the result of a lengthy causal chain. *See, e.g., Pub. Citizen,* 541 U.S. at 767–68 (''In particular, 'courts must look to the underlying policies or legislative intent in order to draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not.' '' (quoting *Metro. Edison Co.,* 460 U.S. at 774 n.7)); *Metro. Edison Co.,* 460 U.S. at 774 (noting effects may not fall within section 102 of NEPA because ''the causal chain is too attenuated''). To reinforce CEQ's proposed simplified definition of effects, CEQ proposes to consolidate paragraphs (a), (b), and (d) of 40 CFR 1502.16, ''Environmental consequences,'' into a new § 1502.16(a)(1).

Further, CEQ proposes to codify a key holding of *Public Citizen* relating to the definition of effects to make clear that effects do not include effects that the agency has no authority to prevent or would happen even without the agency action, because they would not have a sufficiently close causal connection to the proposed action. This clarification will help agencies better understand what effects they need to analyze and discuss, helping to reduce delays and paperwork with unnecessary analyses.

CEQ invites comment on the proposed revisions to the definition of effects, including whether CEQ should affirmatively state that consideration of indirect effects is not required.

Clarifying the meaning of ''environmental assessment.'' CEQ proposes to revise the definition of environmental assessment, describing the purpose for the document and moving all of the operative language from the definition to proposed § 1501.5.

Clarifying the meaning of ''Federal agency.'' CEQ proposes to amend the definition of ''Federal agency'' to broaden it to include States, Tribes, and units of local government to the extent that they have assumed NEPA responsibilities from a Federal agency pursuant to statute. Since the issuance of the CEQ regulations, Congress has authorized assumption of NEPA responsibilities in other contexts besides the Housing and Community Development Act of 1974. *See, e.g.,* Surface Transportation Project Delivery Program, 23 U.S.C. 327. This change would acknowledge these programs and help clarify roles and responsibilities.

Clarifying the meaning of ''human environment.'' CEQ proposes to change ''people'' to ''present and future generations of Americans'' consistent with section 101(a) of NEPA.

Clarifying the meaning of ''lead agency.'' CEQ proposes to amend the definition of lead agency to clarify that this term includes joint lead agencies, which are an acceptable practice.

Clarifying the meaning of ''legislation.'' CEQ proposes to move the operative language to § 1506.8 and strike the example of treaties, because, as noted in section II.H, the President is not a Federal agency, and therefore a request for ratification of a treaty would not be subject to NEPA.

Clarifying the meaning of ''major Federal action.'' CEQ received many comments requesting clarification of the definition of major Federal action. For example, CEQ received comments proposing that non-Federal projects should not be considered major Federal actions based on a very minor Federal role. Commenters also recommended that CEQ clarify the definition to exclude decisions where agencies do not have discretion to consider and potentially modify their actions based on the environmental review.

CEQ proposes to amend the first sentence of the definition to clarify that an action meets the definition if it is subject to Federal control and responsibility, and it has effects that may be significant. CEQ proposes to replace ''major'' effects with ''significant'' in this sentence to align with the NEPA statute.

CEQ proposes to strike the second sentence of the definition, which provides ''Major reinforces but does not have a meaning independent of significantly.'' This is a change in position as compared to CEQ's earlier interpretation of NEPA. In the statute, Congress refers to ''major Federal actions significantly affecting the quality of the human environment.'' 42 U.S.C. 4332(2)(C). Under the current

interpretation, however, the word ''major'' is rendered virtually meaningless.

CEQ proposes to strike the sentence because all words of a statute must be given meaning consistent with longstanding principles of statutory interpretation. *See, e.g., Bennett,* 520 U.S. at 173 (''It is the ' ''cardinal principle of statutory construction'' . . . [that] it is our duty ''to give effect, if possible, to every clause and word of a statute'' . . . rather than to emasculate an entire section.' '' (quoting *United States* v. *Menasche,* 348 U.S. 528, 538 (1955))). The legislative history of NEPA also reflects that Congress used the term ''major'' independently of ''significantly,'' and provided that, for major actions, agencies should make a determination as to whether the proposal would have a significant environmental impact. Specifically, the Senate Report for the National Environmental Policy Act of 1969 states, ''*Each agency which proposes any major actions,* such as project proposals, proposals for new legislation, regulations, policy statements, or expansion or revision of ongoing programs, *shall make a determination as to whether the proposal would have a significant effect upon the quality of the human environment.*'' S. Rep. No. 91–296, at 20 (1969) (emphasis added).[76] Moreover, over the past four decades, in a number of cases, courts have determined that NEPA does not require the preparation of an EIS for actions with minimal Federal involvement or funding. Under this proposed definition, these would be non-major Federal actions.

To clarify that these activities are non-major Federal actions, CEQ proposes to add two sentences to the definition to make clear that this term does not include non-Federal projects with minimal Federal funding or minimal Federal involvement such that the agency cannot control the outcome on the project. In such circumstances, there is no practical reason for an agency to conduct a NEPA analysis because the agency could not influence the outcome of its action to address the effects of the project. For example, this might include a very small percentage of Federal funding provided only to help design an infrastructure project that is otherwise funded through private or local funds. This change would help to reduce costs and delays by more clearly defining the kinds of actions that are appropriately within the scope of NEPA.

[76] *https://ceq.doe.gov/docs/laws-regulations/Senate-Report-on-NEPA.pdf.*

CEQ also proposes to strike the third sentence of the definition, which includes a failure to act in the definition of a major Federal action, and exclude activities that do not result in final agency action under the APA. NEPA applies when agencies are considering a proposal for decision. In the circumstance described in this sentence, there is no proposed action and therefore no alternatives that the agency may consider. *S. Utah Wilderness All.,* 542 U.S. at 70–73.

CEQ also proposes to strike the specific reference to the State and Local Fiscal Assistance Act of 1972 from paragraph (a). The proposed revisions to the definition clarify that general revenue sharing funds would not meet the definition of major Federal action. In particular, CEQ proposes to exclude as non-major Federal actions the farm ownership and operating loan guarantees provided by the Farm Service Agency (FSA) of the U.S. Department of Agriculture pursuant to 7 U.S.C. 1925 and 1941 through 1949, and the business loan guarantee programs of the Small Business Administration (SBA), 15 U.S.C. 636(a), 636(m), and 695 through 697f. Under the farm ownership and operating loan programs, FSA does not control the bank, or the borrower; the agency does not control the subsequent use of such funds and does not operate any facilities. In the event of a default, properties are sold, and FSA never takes physical possession of, operates, or manages any facility. SBA's business loan programs operate in similar fashion. Further, under those programs no Federal funds are expended unless there is a default by the borrower paying the loan.

CEQ invites comment on whether it should make any further changes to this paragraph, including changing ''partly'' to ''predominantly'' for consistency with the edits to the introductory paragraph regarding ''minimal Federal funding.'' CEQ also invites comment whether there should be a threshold (percentage or dollar figure) for ''minimal Federal funding,'' and if so, what would be an appropriate threshold and the basis for such a threshold. CEQ also invites comment on whether any types of financial instruments, including loans and loan guarantees, should be considered non-major Federal actions and the basis for such exclusion.

Additionally, as a general matter, CEQ invites comment on whether the definition of ''major Federal action'' should be further revised to exclude other *per se* categories of activities or to further address what NEPA analysts have called ''the small handle problem.'' [77] Commenters should provide any relevant data that may assist in identifying such categories of activities. Finally, as noted in the discussion of § 1501.4, CEQ invites comment on whether and how to exclude certain categories of actions common to all Federal agencies from the definition.

CEQ also proposes to insert ''implementation of'' before ''treaties'' in paragraph (b)(1) to clarify that the major Federal action is not the treaty itself, but rather an agency's action to implement that treaty. Further, CEQ proposes to strike ''guide'' from paragraph (b)(2) because guidance is non-binding.

CEQ also invites comment on whether the regulations should clarify that NEPA does not apply extraterritorially, consistent with *Kiobel* v. *Royal Dutch Petroleum Co.,* 569 U.S. 108, 115–16 (2013), in light of the ordinary presumption against extraterritorial application when a statute does not clearly indicate that extraterritorial application is intended by Congress.

Clarifying the meaning of ''mitigation.'' CEQ proposes to amend the definition of ''mitigation'' to define the term and clarify that NEPA does not require adoption of any particular mitigation measure, consistent with *Methow Valley,* 490 U.S. at 352–53. In *Methow Valley,* the Supreme Court held that NEPA and the CEQ regulations require ''that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated,'' but do not establish ''a substantive requirement that a complete mitigation plan be actually formulated and adopted'' before the agency can make its decision. *Id.* at 352.

CEQ also proposes to amend the definition of ''mitigation'' to make clear that mitigation must have a nexus to the effects of the proposed action, is limited to those actions that have an effect on the environment, and does not include actions that do not have an effect on the environment. This would make the NEPA process more effective by clarifying that mitigation measures must actually be designed to mitigate the effects of the proposed action. This amended definition is consistent with CEQ's Mitigation Guidance, *supra* note 18.

Under that guidance, if an agency believes that the proposed action will provide net environmental benefits through use of compensatory mitigation, the agency should incorporate by

[77] *See* Daniel R. Mandelker et al., NEPA Law and Litigation, § 8:20 (2d ed. 2019) (''This problem is sometimes called the 'small handle' problem because [F]ederal action may be only be a 'small handle' on a non[-F]ederal project.'').

reference the documents that demonstrate that the proposed mitigation will be new or in addition to actions that would occur under the no-action alternative, and the financial, legal, and management commitments for the mitigation. Use of well-established mitigation banks and similar compensatory mitigation legal structures should provide the necessary substantiation for the agency's findings on the effectiveness (nexus to effects of the action, proportionality, and durability) of the mitigation. Other actions may be effectively mitigated through use of environmental management systems that provide a structure of procedures and policies to systematically identify, evaluate, and manage environmental impacts of an action during its implementation.[78]

Clarifying the meaning of ''notice of intent.'' CEQ proposes to revise the definition of ''notice of intent'' to remove the operative requirements for the NOI and add the word ''public'' to clarify that the NOI is a public notice.

New definition of ''page.'' A new definition of ''page'' would provide a word count (500 words) for a more standard functional definition of ''page'' for page count and other NEPA purposes. This would update NEPA for modern electronic publishing and internet formatting, in which the number of words per page can vary widely depending on format. It would also ensure some uniformity in document length while allowing unrestricted use of the graphic display of quantitative information, tables, photos, maps, and other geographic information that can provide a much more effective means of conveying information about environmental effects. This change supports the original CEQ page limits as a means of ensuring that environmental documents are readable and useful to decision makers.

New definition of ''participating agency.'' As discussed above, CEQ proposes to add the concept of a participating agency to the CEQ regulations. CEQ proposes to define participating agency consistent with the definition in FAST–41 and 23 U.S.C. 139. CEQ proposes to add participating agencies to § 1501.7(i) regarding the schedule and replace the term ''commenting'' agencies with ''participating'' agencies throughout.

Clarifying the meaning of ''proposal.'' CEQ proposes clarifying edits and to strike the operative language regarding timing of an EIS because it is already addressed in § 1502.5.

New definition of ''publish/publication.'' CEQ proposes to define this term to provide agencies with the flexibility to make environmental reviews and information available to the public by electronic means. The 1978 regulations predate personal computers and a wide range of technologies now used by agencies such as GIS mapping tools and social media. To address environmental justice concerns and ensure that the affected public is not excluded from the NEPA process due to a lack of resources (often referred to as the ''digital divide''), the definition retains a provision for printed environmental documents where necessary for effective public participation.

New definition of ''reasonable alternative.'' Several commenters asked CEQ to include a new definition of ''reasonable alternatives'' in the regulations with emphasis on how technical and economic feasibility should be evaluated. CEQ proposes a new definition of ''reasonable alternative'' that would provide that reasonable alternatives must be technically and economically feasible and meet the purpose and need of the proposed action. *See, e.g., Vt. Yankee,* 435 U.S. at 551 (''alternatives must be bounded by some notion of feasibility''). CEQ also proposes to define reasonable alternatives as ''a reasonable range of alternatives'' to codify Questions 1a and 1b in the Forty Questions, *supra* note 10. Agencies are not required to give detailed consideration to alternatives that are unlikely to be implemented because they are infeasible, ineffective, or inconsistent with the purpose and need for agency action.

Finally, CEQ proposes to clarify that a reasonable alternative must also consider the goals of the applicant when the agency's action involves a non-Federal entity. These changes would help reduce paperwork and delays by helping to clarify the range of alternatives that agencies must consider. Where the agency action is in response to an application for permit or other authorization, the agency should consider the applicant's goals based on the agency's statutory authorization to act, as well as in other congressional directives, in defining the proposed action's purpose and need.

New definition of ''reasonably foreseeable.'' CEQ received comment requesting that the regulations provide a definition of ''reasonably foreseeable.'' CEQ proposes to define ''reasonably foreseeable'' consistent with the ordinary person standard—that is what a person of ordinary prudence would consider in reaching a decision.

New definition of ''senior agency official.'' As discussed in section II.A, the proposed definition of ''senior agency official'' would provide for agency officials that are responsible for the agency's NEPA compliance.

Striking the definition of ''significantly.'' Because the entire definition of significantly is operative language, CEQ proposes to strike this definition and discuss significance in § 1501.4(b), as described above.

Clarifying the meaning of ''tiering.'' CEQ would amend the definition of ''tiering'' to make clear that agencies may use EAs at the programmatic stage as well as the subsequent stages. This would clarify that agencies have flexibility in structuring programmatic NEPA reviews and associated tiering. CEQ would move the operative language regarding tiering from 40 CFR 1508.28 to proposed § 1501.11(b).

K. CEQ Guidance Documents

This proposed rule, if adopted as a final rule, would supersede any previous CEQ NEPA guidance. If CEQ finalizes the proposed rule, CEQ anticipates withdrawing all of the CEQ NEPA guidance that is currently in effect and issuing new guidance as consistent with Presidential directives.

L. Additional Issues on Which CEQ Invites Comment

Based on comments received and CEQ's experience in implementing NEPA, the final rule may include amendments to any provisions in parts 1500 to 1508 of the CEQ regulations. CEQ invites comments recommending, opposing, or providing feedback on specific changes to any provisions in parts 1500 to 1508 of the CEQ regulations, including revising or adopting as regulations existing CEQ guidance or handbooks.

Further, CEQ received comments requesting that the regulations address analysis of greenhouse gas emissions and potential climate change impacts. CEQ has proposed guidance titled ''Draft National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions''[79] to address how NEPA analyses should address greenhouse gas (GHG) emissions. CEQ does not consider it appropriate to address a single category of impacts in the regulations. If CEQ finalizes this proposal, CEQ would review the draft GHG guidance for potential revisions consistent with the

[78] *See* Council on Environmental Quality, Aligning National Environmental Policy Act Processes with Environmental Management Systems (April 2007), *https://ceq.doe.gov/docs/ceq-publications/NEPA_EMS_Guide_final_Apr2007.pdf.*

[79] 84 FR 30097 (June 26, 2019).

regulations. However, CEQ invites comments on whether it should codify any aspects of its proposed GHG guidance in the regulation, and if so, how CEQ should address them in the regulations.

If proposed changes to the CEQ regulations provided in comments on the ANPRM, or on the proposed GHG guidance, are not reflected in this proposal, and the commenter would like to advance those proposals in comments to the NPRM, CEQ requests that the commenter specifically identify and reference to the prior comment.

Finally, CEQ invites comment on whether to update references to ''Council'' in the regulation to ''CEQ'' throughout the rule.

III. Rulemaking Analyses and Notices

A. Executive Order 12866, Regulatory Planning and Review; Executive Order 13563, Improving Regulation and Regulatory Review; and Executive Order 13771, Reducing Regulation and Controlling Regulatory Costs

This proposed rule is a significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review. The docket for this rulemaking documents any changes made in response to OMB recommendations as required by section 6 of E.O. 12866.

B. Regulatory Flexibility Act and Executive Order 13272, Proper Consideration of Small Entities in Agency Rulemaking

The Regulatory Flexibility Act, as amended, (RFA), 5 U.S.C. 601 *et seq.,* and E.O. 13272 [80] require agencies to assess the impacts of proposed and final rules on small entities. Under the RFA, small entities include small businesses, small organizations, and small governmental jurisdictions. An agency must prepare an Initial Regulatory Flexibility Analysis (IRFA) unless it determines and certifies that a proposed rule, if promulgated, would not have a significant economic impact on a substantial number of small entities. The proposed rule would not directly regulate small entities. Rather, the proposed rule applies to Federal agencies and sets forth the process for their compliance with NEPA. Accordingly, CEQ hereby certifies that the proposed rule, if promulgated, will not have a significant economic impact on a substantial number of small entities.

[80] 67 FR 53461 (Aug. 16, 2002).

C. National Environmental Policy Act

This proposed rule, if finalized, would assist agencies in fulfilling their responsibilities under NEPA, but would not make any final determination of what level of NEPA analysis is required for particular actions. The CEQ regulations do not require agencies to prepare a NEPA analysis before establishing or updating agency procedures for implementing NEPA. While CEQ prepared environmental assessments for its promulgation of the CEQ regulations in 1978 and its amendments to 40 CFR 1502.22 in 1986, in the development of this proposed rule, CEQ has determined that the proposed rule would not have a significant effect on the environment because it would not authorize any activity or commit resources to a project that may affect the environment. Therefore, CEQ does not intend to conduct a NEPA analysis of this proposed rule for the same reason that CEQ does not require any Federal agency to conduct NEPA analysis for the development of agency procedures for the implementation of NEPA and the CEQ regulations.

D. Executive Order 13132, Federalism

E.O. 13132 requires agencies to develop an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.[81] Policies that have federalism implications include regulations that have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. CEQ does not anticipate that this proposed rule has federalism implications because it applies to Federal agencies, not States.

E. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

E.O. 13175 requires agencies to have a process to ensure meaningful and timely input by Tribal officials in the development of policies that have Tribal implications.[82] Such policies include regulations that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. While the proposed rule is not a regulatory policy that has Tribal implications, the proposal does, in part, respond to Tribal government comments supporting expansion of the recognition of the sovereign rights, interests, and expertise of Tribes in the NEPA process and CEQ regulations implementing NEPA.

[81] 64 FR 43255 (Aug. 10, 1999).

[82] 65 FR 67249 (Nov. 9, 2000).

In its ANPRM, CEQ included a specific question regarding the representation of Tribal governments in the NEPA process. *See* ANPRM Question 18 (''Are there ways in which the role of [T]ribal governments in the NEPA process should be clarified in CEQ's NEPA regulations, and if so, how?''). More generally, CEQ's ANPRM sought the views of Tribal governments and others on regulatory revisions that CEQ could propose to improve Tribal participation in Federal NEPA processes. *See* ANPRM Question 2 (''Should CEQ's NEPA regulations be revised to make the NEPA process more efficient by better facilitating agency use of environmental studies, analysis, and decisions conducted in earlier Federal, State, Tribal or local environmental reviews or authorization decisions, and if so, how?''). As discussed section II.A, CEQ now proposes to amend its regulations to further support coordination with Tribal governments and agencies and analysis of a proposed action's potential effects on Tribal lands, resources, or areas of historic significance as an important part of Federal agency decision making. In addition to these proposed revisions of the CEQ Regulations, CEQ is inviting comment on other CEQ guidance that warrants codification. *See, e.g.,* CEQ Memorandum titled ''Designation of Non-Federal Agencies to be Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act'' [83] (July 28, 1999) encouraging more active solicitation of Tribal entities for participation as cooperating agencies in NEPA documents.

F. Executive Order 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

E.O. 12898 requires agencies to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.[84] CEQ has

[83] *https://ceq.doe.gov/docs/ceq-regulations-and-guidance/regs/ceqcoop.pdf.*

[84] 59 FR 7629 (Feb. 16, 1994).

analyzed this proposed rule and determined that it would not cause disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. This rule would set forth implementing regulations for NEPA; it is in the agency implementation of NEPA when conducting reviews of proposed agency actions where consideration of environmental justice effects typically occurs.

G. Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

Agencies must prepare a Statement of Energy Effects for significant energy actions under E.O. 13211.[85] This proposed rule is not a ''significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

H. Executive Order 12988, Civil Justice Reform

Under section 3(a) E.O. 12988,[86] agencies must review their proposed regulations to eliminate drafting errors and ambiguities, draft them to minimize litigation, and provide a clear legal standard for affected conduct. Section 3(b) provides a list of specific issues for review to conduct the reviews required by section 3(a). CEQ has conducted this review and determined that this proposed rule complies with the requirements of E.O. 12988.

I. Unfunded Mandate Reform Act

Section 201 of the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531) requires Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments, and the private sector to the extent that such regulations incorporate requirements specifically set forth in law. Before promulgating a rule that may result in the expenditure by a State, local, or Tribal government, in the aggregate, or by the private sector of $100 million, adjusted annually for inflation, in any 1 year, an agency must prepare a written statement that assesses the effects on State, local, and Tribal governments and the private sector. 2 U.S.C. 1532. This proposed rule applies to Federal agencies and would not result in expenditures of $100 million or more for State, local, and Tribal governments, in the aggregate, or the private sector in any 1 year. This action also does not impose any enforceable duty, contain any unfunded mandate, or otherwise have any effect on small governments subject to the requirements of 2 U.S.C. 1531–1538.

J. Paperwork Reduction Act

This proposed rule does not impose any new information collection burden that would require additional review or approval by OMB under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*

List of Subjects in 40 CFR Parts 1500 Through 1508

Administrative practice and procedure; Environmental impact statements; Environmental protection; Natural resources.

Dated: December 23, 2019.

Mary B. Neumayr,

Chairman.

For the reasons discussed in the preamble, the Council on Environmental Quality proposes to amend parts 1500 through 1508 in title 40 of the Code of Federal Regulations to read as follows:

■ 1. Revise part 1500 to read as follows:

PART 1500—PURPOSE AND POLICY

Sec.
1500.1 Purpose and policy.
1500.2 [Reserved]
1500.3 NEPA compliance.
1500.4 Reducing paperwork.
1500.5 Reducing delay.
1500.6 Agency authority.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1500.1 Purpose and policy.

(a) The National Environmental Policy Act (NEPA) is a procedural statute intended to ensure Federal agencies consider the environmental impacts of their actions in the decision-making process. Section 101 of NEPA establishes the national environmental policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. Section 102(2) of NEPA establishes the procedural requirements to carry out the policy stated in section 101 of NEPA. In particular, it requires Federal agencies to provide a detailed statement on proposals for major Federal actions significantly affecting the quality of the human environment. The purpose and function of NEPA is satisfied if Federal agencies have considered relevant environmental information and the public has been informed regarding the decision making process. NEPA does not mandate particular results or substantive outcomes. NEPA's purpose is not to generate paperwork or litigation, but to provide for informed decision making and foster excellent action.

(b) The regulations in parts 1500 through 1508 implement section 102(2) of NEPA. They provide direction to Federal agencies to determine what actions are subject to NEPA's procedural requirements and the level of NEPA review where applicable. These regulations are intended to ensure that relevant environmental information is identified and considered early in the process in order to ensure informed decision making by Federal agencies. The regulations are also intended to ensure that Federal agencies conduct environmental reviews in a coordinated, consistent, predictable and timely manner, and to reduce unnecessary burdens and delays. Finally, the regulations promote concurrent environmental reviews to ensure timely and efficient decision making.

§ 1500.2 [Reserved]

§ 1500.3 NEPA compliance.

(a) *Mandate.* Parts 1500 through 1508 of this title are applicable to and binding on all Federal agencies for implementing the procedural provisions of the National Environmental Policy Act of 1969, as amended (Pub. L. 91–190, 42 U.S.C. 4321 *et seq.*) (NEPA or the Act), except where compliance would be inconsistent with other statutory requirements. These regulations are issued pursuant to NEPA; the Environmental Quality Improvement Act of 1970, as amended (Pub. L. 91–224, 42 U.S.C. 4371 *et seq.*); section 309 of the Clean Air Act, as amended (42 U.S.C. 7609); Executive Order 11514, Protection and Enhancement of Environmental Quality (March 5, 1970), as amended by Executive Order 11991, Relating to the Protection and Enhancement of Environmental Quality (May 24, 1977); and Executive Order 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects (August 15, 2017). These regulations apply to the whole of section 102(2) of NEPA. The provisions of the Act and of these regulations must be read together as a whole to comply with the law. Agency NEPA procedures to implement

[85] 66 FR 28355 (May 22, 2001).

[86] 61 FR 4729 (Feb. 7, 1996).

these regulations shall not impose additional procedures or requirements beyond those set forth in these regulations, except as otherwise provided by law or for agency efficiency.

(b) *Exhaustion.* (1) To ensure informed decision making and reduce delays, agencies shall include a request for comments on potential alternatives and impacts, and identification of any relevant information, studies, or analyses of any kind concerning impacts affecting the quality of the human environment in the notice of intent to prepare an environmental impact statement (§ 1501.9).

(2) The environmental impact statement shall include a summary of the comments received, including all alternatives, information, and analyses submitted by public commenters for consideration by the lead and cooperating agencies in developing the environmental impact statement (§ 1502.17).

(3) For consideration by the lead and cooperating agencies, comments must be submitted within the comment periods provided and shall be as specific as possible (§§ 1503.1 and 1503.3). Comments or objections not submitted shall be deemed unexhausted and forfeited. Any objections to the submitted alternatives, information, and analyses section (§ 1502.17) shall be submitted within 30 days of the notice of availability of the final environmental impact statement.

(4) Based on the summary of the submitted alternatives, information, and analyses section, the decision maker for the lead agency shall certify in the record of decision that the agency considered all of the alternatives, information, and analyses submitted by public commenters for consideration by the lead and cooperating agencies in developing the environmental impact statement (§ 1502.18).

(c) *Actions regarding NEPA compliance.* It is the Council's intention that judicial review of agency compliance with the regulations in parts 1500 through 1508 not occur before an agency has issued the record of decision or taken other final agency action. Any allegation of noncompliance with NEPA and these regulations should be resolved as expeditiously as possible. Agencies may structure their decision making to allow private parties to seek agency stays of final agency decisions pending administrative or judicial review of those decisions. Consistent with their organic statutes, agencies may structure their procedures to provide for efficient mechanisms for seeking, granting and imposing conditions on such stays, consistent with 5 U.S.C. 705. Such mechanisms may include the imposition of an appropriate bond requirement or other security requirement as a condition for a stay.

(d) *Remedies.* Harm from the failure to comply with NEPA can be remedied by compliance with NEPA's procedural requirements as interpreted in the regulations in parts 1500 through 1508. These regulations create no presumption that violation of NEPA is a basis for injunctive relief or for a finding of irreparable harm. These regulations do not create a cause of action or right of action for violation of NEPA, which contains no such cause of action or right of action. It is the Council's intention that any actions to review, enjoin, stay, or alter an agency decision on the basis of an alleged NEPA violation be raised as soon as practicable to avoid or minimize any costs to agencies, applicants, or any affected third parties. It is also the Council's intention that minor, non-substantive errors that have no effect on agency decision making shall be considered harmless and shall not invalidate an agency action.

(e) *Severability.* The sections of parts 1501 through 1508 are separate and severable from one another. If any section or portion therein is stayed or determined to be invalid, or the applicability of any section to any person or entity is held invalid, it is the Council's intention that the validity of the remainder of those parts shall not be affected, with the remaining sections to continue in effect.

§ 1500.4 Reducing paperwork.

Agencies shall reduce excessive paperwork by:

(a) Using categorical exclusions to define categories of actions which do not have a significant effect on the human environment and which are therefore exempt from requirements to prepare an environmental impact statement (§ 1501.4).

(b) Using a finding of no significant impact when an action not otherwise excluded will not have a significant effect on the human environment and is therefore exempt from requirements to prepare an environmental impact statement (§ 1501.6).

(c) Reducing the length of environmental documents by means such as meeting appropriate page limits (§§ 1501.5(e) and 1502.7).

(d) Preparing analytic and concise environmental impact statements (§ 1502.2).

(e) Discussing only briefly issues other than significant ones (§ 1502.2(b)).

(f) Writing environmental impact statements in plain language (§ 1502.8).

(g) Following a clear format for environmental impact statements (§ 1502.10).

(h) Emphasizing the portions of the environmental impact statement that are useful to decision makers and the public (§§ 1502.14 and 1502.15) and reducing emphasis on background material (§ 1502.16).

(i) Using the scoping process, not only to identify significant environmental issues deserving of study, but also to deemphasize insignificant issues, narrowing the scope of the environmental impact statement process accordingly (§ 1501.9).

(j) Summarizing the environmental impact statement (§ 1502.12).

(k) Using programmatic, policy, or plan environmental impact statements and tiering from statements of broad scope to those of narrower scope, to eliminate repetitive discussions of the same issues (§§ 1502.4 and 1501.11).

(l) Incorporating by reference (§ 1501.12).

(m) Integrating NEPA requirements with other environmental review and consultation requirements (§ 1502.25).

(n) Requiring comments to be as specific as possible (§ 1503.3).

(o) Attaching and publishing only changes to the draft environmental impact statement, rather than rewriting and publishing the entire statement when changes are minor (§ 1503.4(c)).

(p) Eliminating duplication with State, Tribal, and local procedures, by providing for joint preparation of environmental documents where practicable (§ 1506.2), and with other Federal procedures, by providing that an agency may adopt appropriate environmental documents prepared by another agency (§ 1506.3).

(q) Combining environmental documents with other documents (§ 1506.4).

§ 1500.5 Reducing delay.

Agencies shall reduce delay by:

(a) Using categorical exclusions to define categories of actions which do not have a significant effect on the human environment (§ 1501.4) and which are therefore exempt from requirements to prepare an environmental impact statement.

(b) Using a finding of no significant impact when an action not otherwise excluded will not have a significant effect on the human environment (§ 1501.6) and is therefore exempt from requirements to prepare an environmental impact statement.

(c) Integrating the NEPA process into early planning (§ 1501.2).

(d) Engaging in interagency cooperation before the environmental assessment or environmental impact statement is prepared, rather than submission of comments on a completed document (§ 1501.8).

(e) Ensuring the swift and fair resolution of lead agency disputes (§ 1501.7).

(f) Using the scoping process for an early identification of what are and what are not the real issues (§ 1501.9).

(g) Meeting appropriate time limits for the environmental assessment and environmental impact statement processes (§ 1501.10).

(h) Preparing environmental impact statements early in the process (§ 1502.5).

(i) Integrating NEPA requirements with other environmental review and consultation requirements (§ 1502.25).

(j) Eliminating duplication with State, Tribal, and local procedures by providing for joint preparation of environmental documents where practicable (§ 1506.2) and with other Federal procedures by providing that agencies may jointly prepare or adopt appropriate environmental documents prepared by another agency (§ 1506.3).

(k) Combining environmental documents with other documents (§ 1506.4).

(l) Using accelerated procedures for proposals for legislation (§ 1506.8).

§ 1500.6 Agency authority.

Each agency shall interpret the provisions of the Act as a supplement to its existing authority and as a mandate to view policies and missions in the light of the Act's national environmental objectives. Agencies shall review their policies, procedures, and regulations accordingly and revise them as necessary to ensure full compliance with the purposes and provisions of the Act as interpreted by the regulations in parts 1500 through 1508. The phrase ''to the fullest extent possible'' in section 102 of NEPA means that each agency of the Federal Government shall comply with that section unless existing law applicable to the agency's operations expressly prohibits or makes compliance impossible. Nothing contained in the regulations in parts 1500 through 1508 is intended or should be construed to limit an agency's other authorities or legal responsibilities.

■ 2. Revise part 1501 to read as follows:

PART 1501—NEPA AND AGENCY PLANNING

Sec.

1501.1 NEPA threshold applicability analysis.
1501.2 Apply NEPA early in the process.
1501.3 Determine the appropriate level of NEPA review.
1501.4 Categorical exclusions.
1501.5 Environmental assessments.
1501.6 Findings of no significant impact.
1501.7 Lead agencies.
1501.8 Cooperating agencies.
1501.9 Scoping.
1501.10 Time limits.
1501.11 Tiering.
1501.12 Incorporation by reference.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1501.1 NEPA threshold applicability analysis.

(a) In assessing whether NEPA applies, Federal agencies should determine:

(1) Whether the proposed action is a major Federal action.

(2) Whether the proposed action, in whole or in part, is a non-discretionary action for which the agency lacks authority to consider environmental effects as part of its decision-making process.

(3) Whether the proposed action is an action for which compliance with NEPA would clearly and fundamentally conflict with the requirements of another statute.

(4) Whether the proposed action is an action for which compliance with NEPA would be inconsistent with Congressional intent due to the requirements of another statute.

(5) Whether the proposed action is an action for which the agency has determined that other analyses or processes under other statutes serve the function of agency compliance with NEPA.

(b) Federal agencies may make these determinations in their agency NEPA procedures (§ 1507.3(c)) or on an individual basis.

§ 1501.2 Apply NEPA early in the process.

(a) Agencies should integrate the NEPA process with other planning and authorization processes at the earliest reasonable time to ensure that agencies consider environmental impacts in their planning and decisions, to avoid delays later in the process, and to head off potential conflicts.

(b) Each agency shall:

(1) Comply with the mandate of section 102(2)(A) of NEPA to ''utilize a systematic, interdisciplinary approach which will [e]nsure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment,'' as specified by § 1507.2.

(2) Identify environmental effects and values in adequate detail so they can be appropriately considered along with economic and technical analyses. Agencies shall review and publish environmental documents and appropriate analyses at the same time as other planning documents.

(3) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources as provided by section 102(2)(E) of NEPA.

(4) Provide for cases where actions that are subject to NEPA are planned by private applicants or other non-Federal entities before Federal involvement so that:

(i) Policies or designated staff are available to advise potential applicants of studies or other information foreseeably required for later Federal action.

(ii) The Federal agency consults early with appropriate State, Tribal, and local governments and with interested private persons and organizations when its own involvement is reasonably foreseeable.

(iii) The Federal agency commences its NEPA process at the earliest reasonable time.

§ 1501.3 Determine the appropriate level of NEPA review.

(a) In assessing the appropriate level of NEPA review, Federal agencies should determine whether the proposed action:

(1) Normally does not have significant effects and is categorically excluded (§ 1501.4);

(2) Is not likely to have significant effects or the significance of the effects is unknown and is therefore appropriate for an environmental assessment (§ 1501.5); or

(3) Is likely to have significant effects and is therefore appropriate for an environmental impact statement (part 1502).

(b) In considering whether the effects of the proposed action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action.

(1) In considering the potentially affected environment, agencies may consider, as appropriate, the affected area (national, regional, or local). Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the Nation as a whole. Both short- and long-term effects are relevant.

(2) In considering the degree of the effects, agencies should consider the

following, as appropriate to the specific action:

(i) Effects may be both beneficial and adverse.

(ii) Effects on public health and safety.

(iii) Effects that would violate Federal, State, Tribal, or local law protecting the environment.

§ 1501.4 Categorical exclusions.

(a) For efficiency, agencies identify in their agency NEPA procedures (§ 1507.3(d)(2)(ii)) categories of actions that normally do not have a significant effect on the human environment, and therefore do not require preparation of an environmental assessment or environmental impact statement.

(b) If an agency determines that a proposed action is covered by a categorical exclusion identified in its agency NEPA procedures, the agency shall evaluate the action for extraordinary circumstances in which a normally excluded action may have a significant effect.

(1) If extraordinary circumstances are present for a proposed action, the agency should consider whether mitigating circumstances or other conditions are sufficient to avoid significant effects and therefore categorically exclude the proposed action.

(2) If the proposed action cannot be categorically excluded, the agency shall prepare an environmental assessment or environmental impact statement.

§ 1501.5 Environmental assessments.

(a) An agency shall prepare an environmental assessment for a proposed action that is not likely to have significant effects or when the significance of the effects is unknown unless the agency finds that a categorical exclusion (§ 1501.4) is applicable or has decided to prepare an environmental impact statement.

(b) An agency may prepare an environmental assessment on any action in order to assist agency planning and decision making.

(c) An environmental assessment shall:

(1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; and

(2) Briefly discuss the purpose and need for the proposed action, alternatives as required by section 102(2)(E) of NEPA, the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.

(d) Agencies shall involve relevant agencies, applicants, and the public, to the extent practicable in preparing environmental assessments.

(e) The text of an environmental assessment shall be no more than 75 pages, not including appendices, unless a senior agency official approves in writing an assessment to exceed 75 pages and establishes a new page limit.

(f) Agencies may apply the following provisions to environmental assessments:

(1) Section 1502.22 Incomplete or unavailable information;

(2) Section 1502.24 Methodology and scientific accuracy; and

(3) Section 1502.25 Environmental review and consultation requirements.

§ 1501.6 Findings of no significant impact.

(a) An agency shall prepare a finding of no significant impact if the agency determines, based on the environmental assessment, not to prepare an environmental impact statement because the proposed action is not likely to have significant effects.

(1) The agency shall make the finding of no significant impact available to the affected public as specified in § 1506.6.

(2) In the following circumstances, the agency shall make the finding of no significant impact available for public review for 30 days before the agency makes its final determination whether to prepare an environmental impact statement and before the action may begin:

(i) The proposed action is, or is closely similar to, one which normally requires the preparation of an environmental impact statement under the procedures adopted by the agency pursuant to § 1507.3, or

(ii) The nature of the proposed action is one without precedent.

(b) The finding of no significant impact shall include the environmental assessment or incorporate it by reference and shall note any other environmental documents related to it (§ 1501.9(f)(3)). If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference.

(c) The finding of no significant impact shall state the means of and authority for any mitigation that the agency has adopted, and any applicable monitoring or enforcement provisions. If the agency finds no significant impacts based on mitigation, the mitigated finding of no significant impact shall state any enforceable mitigation requirements or commitments that will be undertaken to avoid significant impacts.

§ 1501.7 Lead agencies.

(a) A lead agency shall supervise the preparation of an environmental impact statement or environmental assessment if more than one Federal agency either:

(1) Proposes or is involved in the same action; or

(2) Is involved in a group of actions directly related to each other because of their functional interdependence or geographical proximity.

(b) Federal, State, Tribal, or local agencies, including at least one Federal agency, may act as joint lead agencies to prepare an environmental impact statement or environmental assessment (§ 1506.2).

(c) If an action falls within the provisions of paragraph (a) of this section, the potential lead agencies shall determine, by letter or memorandum, which agency shall be the lead agency and which shall be cooperating agencies. The agencies shall resolve the lead agency question so as not to cause delay. If there is disagreement among the agencies, the following factors (which are listed in order of descending importance) shall determine lead agency designation:

(1) Magnitude of agency's involvement.

(2) Project approval/disapproval authority.

(3) Expertise concerning the action's environmental effects.

(4) Duration of agency's involvement.

(5) Sequence of agency's involvement.

(d) Any Federal agency, or any State, Tribal, or local agency or private person substantially affected by the absence of lead agency designation, may make a written request to the senior agency officials of the potential lead agencies that a lead agency be designated.

(e) If Federal agencies are unable to agree on which agency will be the lead agency or if the procedure described in paragraph (c) of this section has not resulted within 45 days in a lead agency designation, any of the agencies or persons concerned may file a request with the Council asking it to determine which Federal agency shall be the lead agency. A copy of the request shall be transmitted to each potential lead agency. The request shall consist of:

(1) A precise description of the nature and extent of the proposed action.

(2) A detailed statement of why each potential lead agency should or should not be the lead agency under the criteria specified in paragraph (c) of this section.

(f) A response may be filed by any potential lead agency concerned within 20 days after a request is filed with the Council. The Council shall determine as soon as possible but not later than 20 days after receiving the request and all responses to it which Federal agency shall be the lead agency and which

other Federal agencies shall be cooperating agencies.

(g) To the extent practicable, if a proposal will require action by more than one Federal agency and the lead agency determines that it requires preparation of an environmental impact statement, the lead and cooperating agencies shall evaluate the proposal in a single environmental impact statement and issue a joint record of decision. To the extent practicable, if the lead agency determines that the proposed action should be evaluated in an environmental assessment, the lead and cooperating agencies should evaluate the proposal in a single environmental assessment and, where appropriate, issue a joint finding of no significant impact.

(h) With respect to cooperating agencies, the lead agency shall:

(1) Request the participation of each cooperating agency in the NEPA process at the earliest practicable time.

(2) Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent practicable, consistent with its responsibility as lead agency.

(3) Meet with a cooperating agency at the latter's request.

(4) Determine the purpose and need, and alternatives in consultation with any cooperating agency.

(i) The lead agency shall develop a schedule, setting milestones for all environmental reviews and authorizations required for implementation of the action, in consultation with any applicant and all joint lead, cooperating, and participating agencies, as soon as practicable.

(j) If the lead agency anticipates that a milestone will be missed, it shall notify appropriate officials at the responsible agencies. The responsible agencies shall elevate, as soon as practicable, to the appropriate officials of the responsible agencies, the issue for timely resolution.

§ 1501.8 Cooperating agencies.

(a) The purpose of this section is to emphasize agency cooperation early in the NEPA process. Any Federal agency with jurisdiction by law shall be a cooperating agency upon request of the lead agency. In addition, any other Federal agency with special expertise with respect to any environmental issue may be a cooperating agency upon request of the lead agency. A State, Tribal, or local agency of similar qualifications may, by agreement with the lead agency, become a cooperating agency. An agency may request the lead agency to designate it a cooperating agency, and a Federal agency may appeal a denial of its request to the Council, in accordance with § 1501.7(e).

(b) Each cooperating agency shall:

(1) Participate in the NEPA process at the earliest practicable time.

(2) Participate in the scoping process (described in § 1501.9).

(3) Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement or environmental assessment concerning which the cooperating agency has special expertise.

(4) Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.

(5) Normally use its own funds. To the extent available funds permit, the lead agency shall fund those major activities or analyses it requests from cooperating agencies. Potential lead agencies shall include such funding requirements in their budget requests.

(6) Consult with the lead agency in developing the schedule (§ 1501.7(i)), meet the schedule, and elevate, as soon as practicable, to the senior agency official of the lead agency relating to purpose and need, alternatives or any other issues any issues that may affect that agency's ability to meet the schedule.

(7) Meet the lead agency's schedule for providing comments and limit its comments to those matters for which it has jurisdiction by law or special expertise with respect to any environmental issue consistent with § 1503.2.

(c) In response to a lead agency's request for assistance in preparing the environmental documents (described in paragraph (b)(3), (4), or (5) of this section), a cooperating agency may reply that other program commitments preclude any involvement or the degree of involvement requested in the action that is the subject of the environmental impact statement or environmental assessment. The cooperating agency shall submit a copy of this reply to the Council and the senior agency official of the lead agency.

§ 1501.9 Scoping.

(a) *Generally.* Agencies shall use an early and open process to determine the scope of issues for analysis in an environmental impact statement, including identifying the significant issues and eliminating from further study non-significant issues. Scoping may begin as soon as practicable after the proposal for action is sufficiently developed for agency consideration. Scoping may include appropriate pre-application procedures or work conducted prior to publication of the notice of intent.

(b) *Invite cooperating and participating agencies.* As part of the scoping process, the lead agency shall invite the participation of likely affected Federal, State, Tribal, and local agencies and governments, the proponent of the action, and other likely affected or interested persons (including those who might not be in accord with the action on environmental grounds), unless there is a limited exception under § 1507.3(e).

(c) *Scoping outreach.* As part of the scoping process the lead agency may hold a scoping meeting or meetings, publish scoping information, or use other means to communicate with those persons or agencies who may be interested or affected, which the agency may integrate with any other early planning meeting. Such a scoping meeting will often be appropriate when the impacts of a particular action are confined to specific sites.

(d) *Notice of intent.* As soon as practicable after determining that a proposal is sufficiently developed to allow for meaningful public comment and requires an environmental impact statement, the lead agency shall publish a notice of intent to prepare an environmental impact statement in the **Federal Register,** except as provided in § 1507.3(e)(3). An agency may publish notice in accordance with § 1506.6. The notice shall include, as appropriate:

(1) The purpose and need for the proposed action;

(2) A preliminary description of the proposed action and alternatives to be considered;

(3) A brief summary of expected impacts;

(4) Anticipated permits and other authorizations;

(5) A schedule for the decision-making process;

(6) A description of the public scoping process, including any scoping meeting(s);

(7) A request for comments on potential alternatives and impacts, and identification of any relevant information, studies, or analyses of any kind concerning impacts affecting the quality of the human environment (§§ 1503.1 and 1503.3); and

(8) Contact information for a person within the agency who can answer questions about the proposed action and the environmental impact statement.

(e) *Determination of scope.* As part of the scoping process, the lead agency shall determine the scope and the significant issues to be analyzed in depth in the environmental impact

statement. To determine the scope of environmental impact statements, agencies shall consider:

(1) Actions (other than unconnected single actions) that may be:

(i) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

(A) Automatically trigger other actions that may require environmental impact statements;

(B) Cannot or will not proceed unless other actions are taken previously or simultaneously; or

(C) Are interdependent parts of a larger action and depend on the larger action for their justification.

(ii) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the most effective way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(2) Alternatives, which include the no action alternative; other reasonable courses of action; and mitigation measures (not in the proposed action).

(3) Impacts.

(f) *Additional scoping responsibilities.* As part of the scoping process, the lead agency shall:

(1) Identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (§ 1506.3), narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere.

(2) Allocate assignments for preparation of the environmental impact statement among the lead and cooperating agencies, with the lead agency retaining responsibility for the statement.

(3) Indicate any public environmental assessments and other environmental impact statements which are being or will be prepared that are related to but are not part of the scope of the impact statement under consideration.

(4) Identify other environmental review, authorization, and consultation requirements so the lead and cooperating agencies may prepare other required analyses and studies concurrently with, and integrated with, the environmental impact statement as provided in § 1502.25.

(5) Indicate the relationship between the timing of the preparation of environmental analyses and the agencies' tentative planning and decision-making schedule.

(g) *Revisions.* An agency shall revise the determinations made under paragraphs (b), (c), (e), and (f) of this section if substantial changes are made later in the proposed action, or if significant new circumstances or information arise which bear on the proposal or its impacts.

§ 1501.10 Time limits.

(a) To ensure that agencies conduct NEPA reviews as efficiently and expeditiously as practicable, Federal agencies should set time limits appropriate to individual actions or types of actions (consistent with the time intervals required by § 1506.11). When multiple agencies are involved the reference to agency below means lead agency.

(b) To ensure timely decision making, agencies shall complete:

(1) Environmental assessments within 1 year unless a senior agency official of the lead agency approves a longer period in writing and establishes a new time limit. One year is measured from the date of decision to prepare an environmental assessment to the publication of a final environmental assessment.

(2) Environmental impact statements within 2 years unless a senior agency official of the lead agency approves a longer period in writing and establishes a new time limit. Two years is measured from the date of the issuance of the notice of intent to the date a record of decision is signed.

(c) The senior agency official may consider the following factors in determining time limits:

(1) Potential for environmental harm.

(2) Size of the proposed action.

(3) State of the art of analytic techniques.

(4) Degree of public need for the proposed action, including the consequences of delay.

(5) Number of persons and agencies affected.

(6) Availability of relevant information.

(7) Other time limits imposed on the agency by law, regulations, or Executive order.

(d) The senior agency official may set overall time limits or limits for each constituent part of the NEPA process, which may include:

(1) Decision on whether to prepare an environmental impact statement (if not already decided).

(2) Determination of the scope of the environmental impact statement.

(3) Preparation of the draft environmental impact statement.

(4) Review of any comments on the draft environmental impact statement from the public and agencies.

(5) Preparation of the final environmental impact statement.

(6) Review of any comments on the final environmental impact statement.

(7) Decision on the action based in part on the environmental impact statement.

(e) The agency may designate a person (such as the project manager or a person in the agency's office with NEPA responsibilities) to expedite the NEPA process.

(f) State, Tribal, or local agencies or members of the public may request a Federal agency to set time limits.

§ 1501.11 Tiering.

(a) Agencies are encouraged to tier their environmental impact statements and environmental assessments where it would eliminate repetitive discussions of the same issues, focus on the actual issues ripe for decision, and exclude from consideration issues already decided or not yet ripe at each level of environmental review. Whenever an agency has prepared an environmental impact statement or environmental assessment for a program or policy and then prepares a subsequent statement or environmental assessment on an action included within the entire program or policy (such as a project- or site-specific action), the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available. Tiering may also be appropriate for different stages of actions.

(b) Tiering is appropriate when the sequence from an environmental impact statement or environmental assessment is:

(1) From a programmatic, plan, or policy environmental impact statement or environmental assessment to a program, plan, or policy statement or assessment of lesser or narrower scope or to a site-specific statement or assessment.

(2) From an environmental impact statement or environmental assessment on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or assessment at a

later stage (such as environmental mitigation). Tiering in such cases is appropriate when it helps the lead agency to focus on the issues that are ripe for decision and exclude from consideration issues already decided or not yet ripe.

§ 1501.12 Incorporation by reference.

Agencies shall incorporate material into environmental documents by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the document and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference.

■ 3. Revise part 1502 to read as follows:

PART 1502—ENVIRONMENTAL IMPACT STATEMENT

Sec.

1502.1 Environmental impact statement purpose.
1502.2 Implementation.
1502.3 Statutory requirements for statements.
1502.4 Major Federal actions requiring the preparation of environmental impact statements.
1502.5 Timing.
1502.6 Interdisciplinary preparation.
1502.7 Page limits.
1502.8 Writing.
1502.9 Draft, final, and supplemental statements.
1502.10 Recommended format.
1502.11 Cover.
1502.12 Summary.
1502.13 Purpose and need.
1502.14 Alternatives including the proposed action.
1502.15 Affected environment.
1502.16 Environmental consequences.
1502.17 Summary of submitted alternatives, information, and analyses.
1502.18 Certification of submitted alternatives, information, and analyses section.
1502.19 List of preparers.
1502.20 Appendix.
1502.21 Publication of the environmental impact statement.
1502.22 Incomplete or unavailable information.
1502.23 Cost-benefit analysis.
1502.24 Methodology and scientific accuracy.
1502.25 Environmental review and consultation requirements.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1502.1 Environmental impact statement purpose.

The primary purpose of an environmental impact statement prepared pursuant to 102(2)(c) is to ensure agencies consider the environmental impacts of their actions in decision making. It shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment. Agencies shall focus on significant environmental issues and alternatives and shall reduce paperwork and the accumulation of extraneous background data. Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses. An environmental impact statement is a document that informs. Federal agency decision making.

§ 1502.2 Implementation.

(a) Environmental impact statements shall not be encyclopedic.

(b) Impacts shall be discussed in proportion to their significance. There shall be only brief discussion of other than significant issues. As in a finding of no significant impact, there should be only enough discussion to show why more study is not warranted.

(c) Environmental impact statements shall be analytic, concise, and no longer than necessary to comply with NEPA and with the regulations in parts 1500 through 1508. Length should be proportional to potential environmental effects and project size.

(d) Environmental impact statements shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of NEPA and other environmental laws and policies.

(e) The range of alternatives discussed in environmental impact statements shall encompass those to be considered by the ultimate agency decision maker.

(f) Agencies shall not commit resources prejudicing selection of alternatives before making a final decision (§ 1506.1).

(g) Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.

§ 1502.3 Statutory requirements for statements.

As required by section 102(2)(C) of NEPA, environmental impact statements are to be included in every Federal agency recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.

§ 1502.4 Major Federal actions requiring the preparation of environmental impact statements.

(a) Agencies shall define the proposal that is the subject of an environmental impact statement based on the statutory authorities for the proposed action. Agencies shall use the criteria for scope (§ 1501.9) to determine which proposal(s) shall be the subject of a particular statement. Agencies shall evaluate in a single environmental impact statement proposals or parts of proposals that are related to each other closely enough to be, in effect, a single course of action.

(b) Environmental impact statements may be prepared for programmatic Federal actions such as the adoption of new agency programs. Agencies shall prepare statements on programmatic actions so that they are relevant to the program decision and time them to coincide with meaningful points in agency planning and decision making.

(c) When preparing statements on programmatic actions (including proposals by more than one agency), agencies may find it useful to evaluate the proposal(s) in one of the following ways:

(1) Geographically, including actions occurring in the same general location, such as body of water, region, or metropolitan area.

(2) Generically, including actions which have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter.

(3) By stage of technological development including Federal or federally assisted research, development or demonstration programs for new technologies which, if applied, could significantly affect the quality of the human environment. Statements on such programs should be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives.

(d) Agencies shall as appropriate employ scoping (§ 1501.9), tiering (§ 1501.11), and other methods listed in §§ 1500.4 and 1500.5 to relate programmatic and narrow actions and to avoid duplication and delay. Agencies may tier their environmental analyses to defer detailed analysis of environmental impacts of specific program elements until such program elements are ripe for

decisions that would involve an irreversible or irretrievable commitment of resources.

§ 1502.5 Timing.

An agency should commence preparation of an environmental impact statement as close as practicable to the time the agency is developing or is presented with a proposal so that preparation can be completed in time for the final statement to be included in any recommendation or report on the proposal. The statement shall be prepared early enough so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made (§§ 1501.2 and 1502.2). For instance:

(a) For projects directly undertaken by Federal agencies the environmental impact statement shall be prepared at the feasibility analysis (go-no go) stage and may be supplemented at a later stage if necessary.

(b) For applications to the agency, appropriate environmental assessments or statements shall be commenced as soon as practicable after the application is received. Federal agencies should work with potential applicants and applicable State, Tribal, and local agencies prior to receipt of the application.

(c) For adjudication, the final environmental impact statement shall normally precede the final staff recommendation and that portion of the public hearing related to the impact study. In appropriate circumstances the statement may follow preliminary hearings designed to gather information for use in the statements.

(d) For informal rulemaking the draft environmental impact statement shall normally accompany the proposed rule.

§ 1502.6 Interdisciplinary preparation.

Environmental impact statements shall be prepared using an interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts (section 102(2)(A) of NEPA). The disciplines of the preparers shall be appropriate to the scope and issues identified in the scoping process (§ 1501.9).

§ 1502.7 Page limits.

The text of final environmental impact statements (*e.g.,* paragraphs (a)(4) through (6) of § 1502.10) shall be 150 pages or fewer and, for proposals of unusual scope or complexity, shall be 300 pages or fewer unless a senior agency official of the lead agency approves in writing a statement to exceed 300 pages and establishes a new page limit.

§ 1502.8 Writing.

Environmental impact statements shall be written in plain language and may use appropriate graphics so that decision makers and the public can readily understand them. Agencies should employ writers of clear prose or editors to write, review, or edit statements, which will be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts.

§ 1502.9 Draft, final, and supplemental statements.

(a) *Generally.* Except for proposals for legislation as provided in § 1506.8 environmental impact statements shall be prepared in two stages and, where necessary, shall be supplemented as provided in paragraph (d)(1) of this section.

(b) *Draft environmental impact statements.* Draft environmental impact statements shall be prepared in accordance with the scope decided upon in the scoping process. The lead agency shall work with the cooperating agencies and shall obtain comments as required in part 1503 of this chapter. The draft statement must meet, to the fullest extent practicable, the requirements established for final statements in section 102(2)(C) of NEPA. If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and publish a supplemental draft of the appropriate portion. The agency shall discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action.

(c) *Final environmental impact statements.* Final environmental impact statements shall address comments as required in part 1503 of this chapter. The agency shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised.

(d) *Supplemental environmental impact statements.* Agencies:

(1) Shall prepare supplements to either draft or final environmental impact statements if a major Federal action remains to occur, and:

(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

(2) May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so.

(3) Shall prepare, publish, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement unless alternative procedures are approved by the Council.

(4) May find that changes to the proposed action or new circumstances or information relevant to environmental concerns are not significant and therefore do not require a supplement. The agency should document the finding consistent with its agency NEPA procedures (§ 1507.3), or, if necessary, in a finding of no significant impact supported by an environmental assessment.

§ 1502.10 Recommended format.

(a) Agencies shall use a format for environmental impact statements which will encourage good analysis and clear presentation of the alternatives including the proposed action. Agencies should use the following standard format for environmental impact statements unless the agency determines that there is a more effective format for communication:

(1) Cover.

(2) Summary.

(3) Table of contents.

(4) Purpose of and need for action.

(5) Alternatives including proposed action (sections 102(2)(C)(iii) and 102(2)(E) of NEPA).

(6) Affected environment and environmental consequences (especially sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA).

(7) Submitted, alternatives, information, and analyses.

(8) List of preparers.

(9) Appendices (if any).

(b) If an agency uses a different format, it shall include paragraphs (a), (b), (c), (d), (e), (f), (g) and (h) of this section, as further described in §§ 1502.11 through 1502.20, in any appropriate format.

§ 1502.11 Cover.

The cover shall not exceed one page and include:

(a) A list of the responsible agencies, including the lead agency and any cooperating agencies.

(b) The title of the proposed action that is the subject of the statement (and, if appropriate, the titles of related cooperating agency actions), together with the State(s) and county(ies) (or other jurisdiction, if applicable) where the action is located.

(c) The name, address, and telephone number of the person at the agency who can supply further information.

(d) A designation of the statement as a draft, final, or draft or final supplement.

(e) A one-paragraph abstract of the statement.

(f) The date by which comments must be received (computed in cooperation with EPA under § 1506.11).

(g) The estimated total cost of preparing the environmental impact statement, including the costs of agency full-time equivalent (FTE) personnel hours, contractor costs, and other direct costs.

§ 1502.12 Summary.

Each environmental impact statement shall contain a summary which adequately and accurately summarizes the statement. The summary shall stress the major conclusions, areas of disputed issues raised by agencies and the public), and the issues to be resolved (including the choice among alternatives). The summary will normally not exceed 15 pages.

§ 1502.13 Purpose and need.

The statement shall briefly specify the underlying purpose and need for the proposed action. When an agency's statutory duty is to review an application for authorization, the agency shall base the purpose and need on the goals of the applicant and the agency's authority.

§ 1502.14 Alternatives including the proposed action.

This section should present the environmental impacts of the proposed action and the alternatives in comparative form based on the information and analysis presented in the sections on the Affected Environment (§ 1502.15) and the Environmental Consequences (§ 1502.16). In this section, agencies shall:

(a) Evaluate reasonable alternatives to the proposed action, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Discuss each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include the no action alternative.

(d) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(e) Include appropriate mitigation measures not already included in the proposed action or alternatives.

§ 1502.15 Affected environment.

The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The description may be combined with evaluation of the environmental consequences (§ 1502.16) and shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement.

§ 1502.16 Environmental consequences.

(a) This section forms the scientific and analytic basis for the comparisons under § 1502.14. It shall consolidate the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of the statement and as much of section 102(2)(C)(iii) of NEPA as is necessary to support the comparisons. This section should not duplicate discussions in § 1502.14. The discussion shall include:

(1) The environmental impacts of the proposed action and reasonable alternatives to the proposed action and their significance. The comparison of the proposed action and reasonable alternatives shall be based on this discussion of the impacts.

(2) Any adverse environmental effects which cannot be avoided should the proposal be implemented.

(3) The relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

(4) Any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.

(5) Possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned. (§ 1506.2(d))

(6) Energy requirements and conservation potential of various alternatives and mitigation measures.

(7) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.

(8) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

(9) Means to mitigate adverse environmental impacts (if not fully covered under § 1502.14(e)).

(10) Where applicable, economic and technical considerations, including the economic benefits of the proposed action.

(b) Economic or social effects by themselves do not require preparation of an environmental impact statement. However, when the agency determines that economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss and give appropriate consideration to these effects on the human environment.

§ 1502.17 Summary of submitted alternatives, information, and analyses.

The environmental impact statement shall include a summary of all alternatives, information, and analyses submitted by public commenters for consideration by the lead and cooperating agencies in developing the environmental impact statement. Consistent with § 1503.1(a)(3), the lead agency shall invite comment on the completeness of the summary in the draft environmental impact statement.

§ 1502.18 Certification of submitted alternatives, information, and analyses section.

Based on the summary of the submitted alternatives, information, and analyses section, the decision maker for the lead agency shall certify in the record of decision that the agency has considered all of the alternatives, information, and analyses submitted by public commenters for consideration by the lead and cooperating agencies in developing the environmental impact statement. Agency environmental impact statements certified in accordance with this section are entitled to a conclusive presumption that the agency has considered the information included in the submitted alternatives, information, and analyses section.

§ 1502.19 List of preparers.

The environmental impact statement shall list the names, together with their qualifications (expertise, experience, professional disciplines), of the persons who were primarily responsible for preparing the environmental impact statement or significant background papers, including basic components of the statement (§§ 1502.6 and 1502.8). Where possible the persons who are responsible for a particular analysis,

including analyses in background papers, shall be identified. Normally the list will not exceed two pages.

§ 1502.20 Appendix.

If an agency prepares an appendix, it shall be published with the environmental impact statement and shall consist of material:

(a) Prepared in connection with an environmental impact statement (as distinct from material which is not so prepared and which is incorporated by reference (§ 1501.12)).

(b) Substantiating any analysis fundamental to the impact statement.

(c) Relevant to the decision to be made.

§ 1502.21 Publication of the environmental impact statement.

Agencies shall publish the entire draft and final environmental impact statements and unchanged statements as provided in § 1503.4(c). The agency shall transmit the entire statement electronically (or in paper copy, if so requested due to economic or other hardship) to:

(a) Any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved and any appropriate Federal, State, Tribal, or local agency authorized to develop and enforce environmental standards.

(b) The applicant, if any.

(c) Any person, organization, or agency requesting the entire environmental impact statement.

(d) In the case of a final environmental impact statement any person, organization, or agency which submitted substantive comments on the draft.

§ 1502.22 Incomplete or unavailable information.

(a) When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall make clear that such information is lacking.

(b) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not unreasonable, the agency shall include the information in the environmental impact statement.

(c) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are unreasonable or the means to obtain it are not known, the agency shall include within the environmental impact statement:

(1) A statement that such information is incomplete or unavailable;

(2) A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;

(3) A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and

(4) The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

(d) For the purposes of this section, ''reasonably foreseeable'' includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

§ 1502.23 Cost-benefit analysis.

If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated by reference or appended to the statement as an aid in evaluating the environmental consequences. To assess the adequacy of compliance with section 102(2)(B) of NEPA the statement shall, when a cost-benefit analysis is prepared, discuss the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities. For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations. In any event, an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision.

§ 1502.24 Methodology and scientific accuracy.

Agencies shall ensure the professional integrity, including scientific integrity, of the discussions and analyses in environmental documents. Agencies shall make use of reliable existing data and resources and are not required to undertake new scientific and technical research to inform their analyses. Agencies may make use of any reliable data sources, such as remotely gathered information or statistical models. They shall identify any methodologies used and shall make explicit reference to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

§ 1502.25 Environmental review and consultation requirements.

(a) To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrent and integrated with environmental impact analyses and related surveys and studies required by all other Federal environmental review laws and Executive orders applicable to the proposed action, including the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*), the National Historic Preservation Act of 1966 (16 U.S.C. 470 *et seq.*), and the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*).

(b) The draft environmental impact statement shall list all Federal permits, licenses, and other authorizations which must be obtained in implementing the proposal. If it is uncertain whether a Federal permit, license, or other authorization is necessary, the draft environmental impact statement shall so indicate.

■ 4. Revise part 1503 to read as follows:

PART 1503—COMMENTING ON ENVIRONMENTAL IMPACT STATEMENTS

Sec.
1503.1 Inviting comments and requesting information and analyses.
1503.2 Duty to comment.
1503.3 Specificity of comments and information.
1503.4 Response to comments.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; and E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977.

§ 1503.1 Inviting comments and requesting information and analyses.

(a) After preparing a draft environmental impact statement and before preparing a final environmental impact statement the agency shall:

(1) Obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce environmental standards.

(2) Request the comments of:

(i) Appropriate State, Tribal, and local agencies which are authorized to develop and enforce environmental standards;

(ii) State, Tribal, or local governments that may be affected by the proposed action;

(iii) Any agency which has requested that it receive statements on actions of the kind proposed;

(iv) The applicant, if any; and

(v) The public, affirmatively soliciting comments in a manner designed to inform those persons or organizations who may be interested in or affected by the proposed action.

(3) Invite comment specifically on the completeness of the submitted alternatives, information, and analyses section (§ 1502.17).

(b) An agency may request comments on a final environmental impact statement before the final decision. An agency shall request comments and provide a 30-day comment period on the final environmental impact statement's submitted alternatives, information, and analyses section (§ 1502.17). Other agencies or persons may make comments consistent with the time periods provided for under § 1506.11.

(c) An agency shall provide for electronic submission of public comments, with reasonable measures to ensure the comment process is accessible to affected persons.

§ 1503.2 Duty to comment.

Cooperating agencies and agencies that are authorized to develop and enforce environmental standards shall comment on statements within their jurisdiction, expertise, or authority within the time period specified for comment in § 1506.11. A Federal agency may reply that it has no comment. If a cooperating agency is satisfied that its views are adequately reflected in the environmental impact statement, it should reply that it has no comment.

§ 1503.3 Specificity of comments and information.

(a) To promote informed decision making, comments on an environmental impact statement or on a proposed action shall be as specific as possible, may address either the adequacy of the statement or the merits of the alternatives discussed or both, and shall provide as much detail as necessary to meaningfully participate and fully inform the agency of the commenter's position. Comments should explain why the issue raised is significant to the consideration of potential environmental impacts and alternatives to the proposed action, as well as economic and employment impacts, and other impacts affecting the quality of the human environment. Comments should reference the corresponding section or page number of the draft environmental impact statement, propose specific changes to those parts of the statement, where possible, and include or describe the data sources and methodologies supporting the proposed changes.

(b) Comments on the submitted alternatives, information, and analyses section (§ 1502.17) should identify any additional alternatives, information, or analyses not included in the draft environmental impact statement, and shall be as specific as possible. Comments on and objections to this section shall be raised within 30 days of the publication of the notice of availability of the final environmental impact statement. Comments not provided within 30 days shall be considered exhausted and forfeited, consistent with § 1500.3(b).

(c) When a participating agency criticizes a lead agency's predictive methodology, the participating agency should describe the alternative methodology which it prefers and why.

(d) A cooperating agency shall specify in its comments whether it needs additional information to fulfill other applicable environmental reviews or consultation requirements and what information it needs. In particular, it shall specify any additional information it needs to comment adequately on the draft statement's analysis of significant site-specific effects associated with the granting or approving by that cooperating agency of necessary Federal permits, licenses, or authorizations.

(e) When a cooperating agency with jurisdiction by law specifies mitigation measures it considers necessary to allow the agency to grant or approve applicable permit, license, or related requirements or concurrences, the cooperating agency shall cite to its applicable statutory authority.

§ 1503.4 Response to comments.

(a) An agency preparing a final environmental impact statement shall consider substantive comments timely submitted during the public comment period and may respond individually and collectively. In the final environmental impact statement, the agency may:

(1) Modify alternatives including the proposed action.

(2) Develop and evaluate alternatives not previously given serious consideration by the agency.

(3) Supplement, improve, or modify its analyses.

(4) Make factual corrections.

(5) Explain why the comments do not warrant further agency response.

(b) All substantive comments received on the draft statement (or summaries thereof where the response has been exceptionally voluminous), shall be appended to the final statement or otherwise published.

(c) If changes in response to comments are minor and are confined to the responses described in paragraphs (a)(4) and (5) of this section, agencies may write the changes on errata sheets and attach the responses to the statement instead of rewriting the draft statement. In such cases only the comments, the responses, and the changes and not the final statement need be published (§ 1502.20). The entire document with a new cover sheet shall be filed with the Environmental Protection Agency as the final statement (§ 1506.10).

■ 5. Revise part 1504 to read as follows:

PART 1504—PRE–DECISIONAL REFERRALS TO THE COUNCIL OF PROPOSED FEDERAL ACTIONS DETERMINED TO BE ENVIRONMENTALLY UNSATISFACTORY

Sec.

1504.1 Purpose.
1504.2 Criteria for referral.
1504.3 Procedure for referrals and response.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; and E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977.

§ 1504.1 Purpose.

(a) This part establishes procedures for referring to the Council Federal interagency disagreements concerning proposed major Federal actions that might cause unsatisfactory environmental effects. It provides means for early resolution of such disagreements.

(b) Under section 309 of the Clean Air Act (42 U.S.C. 7609), the Administrator of the Environmental Protection Agency is directed to review and comment publicly on the environmental impacts of Federal activities, including actions for which environmental impact statements are prepared. If after this review the Administrator determines that the matter is ''unsatisfactory from the standpoint of public health or welfare or environmental quality,'' section 309 directs that the matter be referred to the Council (hereafter ''environmental referrals'').

(c) Under section 102(2)(C) of NEPA (42 U.S.C. 4332(2)(C)), other Federal agencies may produce similar reviews of environmental impact statements, including judgments on the acceptability of anticipated environmental impacts. These reviews must be made available to the President, the Council and the public.

§ 1504.2 Criteria for referral.

Environmental referrals should be made to the Council only after concerted, timely (as early as practicable in the process), but unsuccessful attempts to resolve differences with the lead agency. In determining what environmental objections to the matter are appropriate to refer to the Council, an agency should weigh potential adverse environmental impacts, considering:

(a) Possible violation of national environmental standards or policies.

(b) Severity.

(c) Geographical scope.

(d) Duration.

(e) Importance as precedents.

(f) Availability of environmentally preferable alternatives.

(g) Economic and technical considerations, including the economic costs of delaying or impeding the decision making of the agencies involved in the action.

§ 1504.3 Procedure for referrals and response.

(a) A Federal agency making the referral to the Council shall:

(1) Advise the lead agency at the earliest possible time that it intends to refer a matter to the Council unless a satisfactory agreement is reached.

(2) Include such advice whenever practicable in the referring agency's comments on the environmental assessment or draft environmental impact statement.

(3) Identify any essential information that is lacking and request that the lead agency make it available at the earliest possible time.

(4) Send copies of such advice to the Council.

(b) The referring agency shall deliver its referral to the Council no later than 25 days after the lead agency has made the final environmental impact statement available to the Environmental Protection Agency, participating agencies, and the public, and in the case of an environmental assessment, no later than 25 days after the lead agency makes it available. Except when the lead agency grants an extension of this period, the Council will not accept a referral after that date.

(c) The referral shall consist of:

(1) A copy of the letter signed by the head of the referring agency and delivered to the lead agency informing the lead agency of the referral and the reasons for it.

(2) A statement supported by factual evidence leading to the conclusion that the matter is unsatisfactory from the standpoint of public health or welfare or environmental quality. The statement shall:

(i) Identify any disputed material facts and incorporate (by reference if appropriate) agreed upon facts;

(ii) Identify any existing environmental requirements or policies which would be violated by the matter;

(iii) Present the reasons for the referral;

(ii) Contain a finding by the agency whether the issue raised is of national importance because of the threat to national environmental resources or policies or for some other reason;

(iii) Review the steps taken by the referring agency to bring its concerns to the attention of the lead agency at the earliest possible time; and

(iv) Give the referring agency's recommendations as to what mitigation alternative, further study, or other course of action (including abandonment of the matter) are necessary to remedy the situation.

(d) No later than 25 days after the referral to the Council, the lead agency may deliver a response to the Council and the referring agency. If the lead agency requests more time and gives assurance that the matter will not go forward in the interim, the Council may grant an extension. The response shall:

(1) Address fully the issues raised in the referral.

(2) Be supported by evidence and explanations, as appropriate.

(3) Give the lead agency's response to the referring agency's recommendations.

(e) Applicants may provide views in writing to the Council no later than the response.

(f) No later than 25 days after receipt of both the referral and any response or upon being informed that there will be no response (unless the lead agency agrees to a longer time), the Council may take one or more of the following actions:

(1) Conclude that the process of referral and response has successfully resolved the problem.

(2) Initiate discussions with the agencies with the objective of mediation with referring and lead agencies.

(3) Obtain additional views and information.

(4) Determine that the issue is not one of national importance and request the referring and lead agencies to pursue their decision process.

(5) Determine that the issue should be further negotiated by the referring and lead agencies and is not appropriate for Council consideration until one or more heads of agencies report to the Council that the agencies' disagreements are irreconcilable.

(6) Publish its findings and recommendations (including where appropriate a finding that the submitted evidence does not support the position of an agency).

(7) When appropriate, submit the referral and the response together with the Council's recommendation to the President for action.

(g) The Council shall take no longer than 60 days to complete the actions specified in paragraph (f)(2), (3), or (5) of this section.

(h) The referral process is not intended to create any private rights of action or to be judicially reviewable because any voluntary resolutions by the agency parties do not represent final agency action and instead are only provisional and dependent on later consistent action by the action agencies.

■ 6. Revise part 1505 to read as follows:

PART 1505—NEPA AND AGENCY DECISION MAKING

Sec.
1505.1 [Reserved]
1505.2 Record of decision in cases requiring environmental impact statements.
1505.3 Implementing the decision.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1505.1 [Reserved]

§ 1505.2 Record of decision in cases requiring environmental impact statements.

At the time of its decision (§ 1506.11) or, if appropriate, its recommendation to Congress, each agency shall prepare and timely publish a concise public record of decision or joint record of decision. The record, which each agency may integrate into any other record it prepares, shall:

(a) State the decision.

(b) Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable. An agency may discuss preferences among alternatives based on relevant factors including economic and technical considerations and agency statutory missions. An agency shall identify and discuss all such factors, including any essential considerations of national policy which were balanced by the agency in making its decision and state how those considerations entered into its decision.

(c) State whether the agency has adopted all practicable means to avoid or minimize environmental harm from the alternative selected, and if not, why the agency did not. The agency shall adopt and summarize, where applicable, a monitoring and enforcement program

for any enforceable mitigation requirements or commitments.

(d) Address any comments or objections received on the final environmental impact statement's submitted alternatives, information, and analyses section.

(e) Include the decision maker's certification regarding the agency's consideration of the submitted alternatives, information, and analyses submitted by public commenters (§§ 1502.17 and 1502.18).

§ 1505.3 Implementing the decision.

Agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases. Mitigation (§ 1505.2(c)) and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented by the lead agency or other appropriate consenting agency. The lead agency shall:

(a) Include appropriate conditions in grants, permits or other approvals.

(b) Condition funding of actions on mitigation.

(c) Upon request, inform cooperating or participating agencies on progress in carrying out mitigation measures which they have proposed and which were adopted by the agency making the decision.

(d) Upon request, publish the results of relevant monitoring.

■ 7. Revise part 1506 to read as follows:

PART 1506—OTHER REQUIREMENTS OF NEPA

Sec.

1506.1 Limitations on actions during NEPA process.
1506.2 Elimination of duplication with State, Tribal, and local procedures.
1506.3 Adoption.
1506.4 Combining documents.
1506.5 Agency responsibility for environmental documents.
1506.6 Public involvement.
1506.7 Further guidance.
1506.8 Proposals for legislation.
1506.9 Proposals for regulations.
1506.10 Filing requirements.
1506.11 Timing of agency action.
1506.12 Emergencies.
1506.13 Effective date.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1506.1 Limitations on actions during NEPA process.

(a) Except as provided in paragraphs (b) and (c) of this section, until an agency issues a finding of no significant impact, as provided in § 1501.6, or record of decision, as provided in § 1505.2, no action concerning the proposal may be taken which would:

(1) Have an adverse environmental impact; or

(2) Limit the choice of reasonable alternatives.

(b) If any agency is considering an application from a non-Federal entity, and is aware that the applicant is about to take an action within the agency's jurisdiction that would meet either of the criteria in paragraph (a) of this section, then the agency shall promptly notify the applicant that the agency will take appropriate action to ensure that the objectives and procedures of NEPA are achieved. This section does not preclude development by applicants of plans or designs or performance of other activities necessary to support an application for Federal, State, Tribal, or local permits or assistance. An agency considering a proposed action for Federal funding may authorize such activities, including, but not limited to, acquisition of interests in land (*e.g.,* fee simple, rights-of-way, and conservation easements), purchase of long lead-time equipment, and purchase options made by applicants.

(c) While work on a required programmatic environmental impact statement or environmental assessment is in progress and the action is not covered by an existing programmatic statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:

(1) Is justified independently of the program;

(2) Is itself accompanied by an adequate environmental impact statement; and

(3) Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives.

§ 1506.2 Elimination of duplication with State, Tribal, and local procedures.

(a) Federal agencies are authorized to cooperate with State, Tribal, and local agencies that are responsible for preparing environmental documents, including those prepared pursuant to section 102(2)(D) of NEPA.

(b) Agencies shall cooperate with State, Tribal, and local agencies to the fullest extent practicable to reduce duplication between NEPA and State, Tribal, and local requirements, including through use of environmental studies, analysis, and decisions conducted in support of Federal, State, Tribal, or local environmental reviews or authorization decisions, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall to the fullest extent practicable include:

(1) Joint planning processes.

(2) Joint environmental research and studies.

(3) Joint public hearings (except where otherwise provided by statute).

(4) Joint environmental assessments.

(c) Agencies shall cooperate with State, Tribal, and local agencies to the fullest extent practicable to reduce duplication between NEPA and comparable State, Tribal, and local requirements, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall include, to the fullest extent practicable, joint environmental impact statements. In such cases one or more Federal agencies and one or more State, Tribal, or local agencies shall be joint lead agencies. Where State or Tribal laws or local ordinances have environmental impact statement or similar requirements in addition to but not in conflict with those in NEPA, Federal agencies may cooperate in fulfilling these requirements, as well as those of Federal laws, so that one document will comply with all applicable laws.

(d) To better integrate environmental impact statements into State, Tribal, or local planning processes, environmental impact statements shall discuss any inconsistency of a proposed action with any approved State, Tribal, or local plan or law (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law. While the statement should discuss any inconsistencies, NEPA does not require reconciliation.

§ 1506.3 Adoption.

(a) An agency may adopt a Federal environmental assessment, draft or final environmental impact statement, or portion thereof, provided that the assessment, statement, or portion thereof meets the standards for an adequate assessment or statement under the regulations in parts 1500 through 1508.

(b) If the actions covered by the original environmental impact statement and the proposed action are substantially the same, the agency adopting another agency's statement shall republish it as a final statement.

Otherwise, the adopting agency shall treat the statement as a draft and republish it (except as provided in paragraph (c) of this section), consistent with § 1506.10.

(c) A cooperating agency may adopt in its record of decision without republishing the environmental impact statement of a lead agency when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied.

(d) If the actions covered by the original environmental assessment and the proposed action are substantially the same, an agency may adopt another agency's environmental assessment in its finding of no significant impact and provide notice consistent with § 1501.6.

(e) The adopting agency shall specify if one of the following circumstances are present:

(1) The agency is adopting an assessment or statement that is not final within the agency that prepared it.

(2) The action assessed in the assessment or statement is the subject of a referral under part 1504.

(3) The assessment or statement's adequacy is the subject of a judicial action that is not final.

(f) An agency may adopt another agency's determination that a categorical exclusion applies to a proposed action if the adopting agency's proposed action is substantially the same.

§ 1506.4 Combining documents.

Agencies should combine, to the fullest extent practicable, any environmental document with any other agency document to reduce duplication and paperwork.

§ 1506.5 Agency responsibility for environmental documents.

(a) *Information.* If an agency requires an applicant to submit environmental information for possible use by the agency in preparing an environmental document, then the agency should assist the applicant by outlining the types of information required. The agency shall independently evaluate the information submitted and shall be responsible for its accuracy. If the agency chooses to use the information submitted by the applicant in the environmental document, either directly or by reference, then the names of the persons responsible for the independent evaluation shall be included in the list of preparers (§ 1502.19). It is the intent of this paragraph that acceptable work not be redone, but that it be verified by the agency.

(b) *Environmental assessments.* If an agency permits an applicant to prepare an environmental assessment, the agency, besides fulfilling the requirements of paragraph (a) of this section, shall make its own evaluation of the environmental issues and take responsibility for the scope and content of the environmental assessment.

(c) *Environmental impact statements.* Except as provided in §§ 1506.2 and 1506.3, the lead agency, a contractor or applicant under the direction of the lead agency, or a cooperating agency, where appropriate (§ 1501.8(b)), may prepare an environmental impact statement pursuant to the requirements of NEPA.

(1) If a contractor or applicant prepares the document, the responsible Federal official shall provide guidance, participate in its preparation, independently evaluate it prior to its approval, and take responsibility for its scope and contents.

(2) Nothing in this section is intended to prohibit any agency from requesting any person, including the applicant, to submit information to it or to prohibit any person from submitting information to any agency for use in preparing environmental documents.

§ 1506.6 Public involvement.

Agencies shall:

(a) Make diligent efforts to involve the public in preparing and implementing their NEPA procedures (§ 1507.3).

(b) Provide public notice of NEPA-related hearings, public meetings, and other opportunities for public engagement, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected by their proposed actions.

(1) In all cases, the agency shall notify those who have requested notice on an individual action.

(2) In the case of an action with effects of national concern, notice shall include publication in the **Federal Register**. An agency may notify organizations that have requested regular notice. Agencies shall maintain a list of such organizations.

(3) In the case of an action with effects primarily of local concern, the notice may include:

(i) Notice to State and local agencies that may be interested or affected by the proposed action.

(ii) Notice to affected Tribal governments.

(iii) Following the affected State or Tribe's public notice procedures for comparable actions.

(iv) Publication in local newspapers (in papers of general circulation rather than legal papers).

(v) Notice through other local media.

(vi) Notice to potentially interested community organizations including small business associations.

(vii) Publication in newsletters that may be expected to reach potentially interested persons.

(viii) Direct mailing to owners and occupants of nearby or affected property.

(ix) Posting of notice on and off site in the area where the action is to be located.

(x) Notice through electronic media (*e.g.,* a project or agency website, email, or social media). For actions occurring in whole or part in an area with limited access to high-speed internet, public notification may not be limited to solely electronic methods.

(c) Hold or sponsor public hearings, public meetings, or other opportunities for public engagement whenever appropriate or in accordance with statutory requirements applicable to the agency. Agencies may conduct public hearings and public meetings by means of electronic communication except where another format is required by law.

(d) Solicit appropriate information from the public.

(e) Explain in its procedures where interested persons can get information or status reports on environmental impact statements and other elements of the NEPA process.

(f) Make environmental impact statements, the comments received, and any underlying documents available to the public pursuant to the provisions of the Freedom of Information Act, as amended (5 U.S.C. 552).

§ 1506.7 Further guidance.

The Council may provide further guidance concerning NEPA and its procedures consistent with Executive Order 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects (August 5, 2017), Executive Order 13891, Promoting the Rule of Law Through Improved Agency Guidance Documents (October 9, 2019), and any other applicable Executive orders.

§ 1506.8 Proposals for legislation.

(a) When developing or providing significant cooperation and support in the development of legislation, agencies shall integrate the NEPA process for proposals for legislation significantly affecting the quality of the human environment with the legislative process of the Congress. The test for significant cooperation is whether the proposal is in fact predominantly that of the agency rather than another source. Drafting

does not by itself constitute significant cooperation. Only the agency which has primary responsibility for the subject matter involved will prepare a legislative environmental impact statement.

(b) A legislative environmental impact statement is the detailed statement required by law to be included in a recommendation or report on a legislative proposal to Congress. A legislative environmental impact statement shall be considered part of the formal transmittal of a legislative proposal to Congress; however, it may be transmitted to Congress up to 30 days later in order to allow time for completion of an accurate statement that can serve as the basis for public and Congressional debate. The statement must be available in time for Congressional hearings and deliberations.

(c) Preparation of a legislative environmental impact statement shall conform to the requirements of the regulations in parts 1500 through 1508, except as follows:

(1) There need not be a scoping process.

(2) Agencies shall prepare the legislative statement in the same manner as a draft environmental impact statement and need not prepare a final statement unless any of the following conditions exist. In such cases, the agency shall prepare and publish the statements consistent with §§ 1503.1 and 1506.11:

(i) A Congressional committee with jurisdiction over the proposal has a rule requiring both draft and final environmental impact statements.

(ii) The proposal results from a study process required by statute (such as those required by the Wild and Scenic Rivers Act (16 U.S.C. 1271 *et seq.*) and the Wilderness Act (16 U.S.C. 1131 *et seq.*)).

(iii) Legislative approval is sought for Federal or federally assisted construction or other projects which the agency recommends be located at specific geographic locations. For proposals requiring an environmental impact statement for the acquisition of space by the General Services Administration, a draft statement shall accompany the Prospectus or the 11(b) Report of Building Project Surveys to the Congress, and a final statement shall be completed before site acquisition.

(iv) The agency decides to prepare draft and final statements.

(d) Comments on the legislative statement shall be given to the lead agency which shall forward them along with its own responses to the Congressional committees with jurisdiction.

§ 1506.9 Proposals for regulations.

(a) Where the proposal for major Federal action is the promulgation of a rule or regulation, analyses prepared pursuant to other statutory or Executive order requirements may serve as the functional equivalent of the EIS and be sufficient to comply with NEPA.

(b) To determine that an analysis serves as the functional equivalent of an EIS, an agency shall find that:

(1) There are substantive and procedural standards that ensure full and adequate consideration of environmental issues;

(2) There is public participation before a final alternative is selected; and

(3) A purpose of the analysis that the agency is conducting is to examine environmental issues.

§ 1506.10 Filing requirements.

(a) Environmental impact statements together with comments and responses shall be filed with the Environmental Protection Agency, Office of Federal Activities, consistent with EPA's procedures.

(b) Statements shall be filed with the EPA no earlier than they are also transmitted to participating agencies and made available to the public. EPA may issue guidelines to agencies to implement its responsibilities under this section and § 1506.11.

§ 1506.11 Timing of agency action.

(a) The Environmental Protection Agency shall publish a notice in the **Federal Register** each week of the environmental impact statements filed since its prior notice. The minimum time periods set forth in this section shall be calculated from the date of publication of this notice.

(b) Unless otherwise provided by law, including statutory provisions for combining a final environmental impact statement and record of decision, Federal agencies may not make or issue a record of decision under § 1505.2 for the proposed action until the later of the following dates:

(1) 90 days after publication of the notice described above in paragraph (a) of this section for a draft environmental impact statement.

(2) 30 days after publication of the notice described above in paragraph (a) of this section for a final environmental impact statement.

(c) An agency may make an exception to the rule on timing set forth in paragraph (b) of this section for a proposed action in the following circumstances.

(1) Some agencies have a formally established appeal process which allows other agencies or the public to take appeals on a decision and make their views known, after publication of the final environmental impact statement. In such cases, where a real opportunity exists to alter the decision, the decision may be made and recorded at the same time the environmental impact statement is published. This means that the period for appeal of the decision and the 30-day period set forth in paragraph (b)(2) of this section may run concurrently. In such cases, the environmental impact statement shall explain the timing and the public's right of appeal and provide notification consistent with § 1506.10.

(2) An agency engaged in rulemaking under the Administrative Procedure Act or other statute for the purpose of protecting the public health or safety may waive the time period in paragraph (b)(2) of this section, publish a decision on the final rule simultaneously with publication of the notice of the availability of the final environmental impact statement and provide notification consistent with § 1506.10, as described in paragraph (a) of this section.

(d) If an agency files the final environmental impact statement within 90 days of the filing of the draft environmental impact statement with the Environmental Protection Agency, the decision-making period and the 90-day period may run concurrently. However, subject to paragraph (e) of this section, agencies shall allow at least 45 days for comments on draft statements.

(e) The lead agency may extend the minimum periods in paragraph (b) of this section and provide notification consistent with § 1506.10. The Environmental Protection Agency may upon a showing by the lead agency of compelling reasons of national policy reduce the minimum periods and may upon a showing by any other Federal agency of compelling reasons of national policy also extend the minimum periods, but only after consultation with the lead agency. The lead agency may modify the minimum periods when necessary to comply with other specific statutory requirements. (§ 1507.3(e)(2)) Failure to file timely comments shall not be a sufficient reason for extending a period. If the lead agency does not concur with the extension of time, EPA may not extend it for more than 30 days. When the Environmental Protection Agency reduces or extends any period of time it shall notify the Council.

§ 1506.12 Emergencies.

Where emergency circumstances make it necessary to take an action with significant environmental impact without observing the provisions of the regulations in parts 1500 through 1508, the Federal agency taking the action should consult with the Council about alternative arrangements for compliance with section 102(2)(C) of NEPA. Agencies and the Council will limit such arrangements to actions necessary to control the immediate impacts of the emergency. Other actions remain subject to NEPA review.

§ 1506.13 Effective date.

The regulations in parts 1500 through 1508 apply to any NEPA process begun after [EFFECTIVE DATE OF FINAL RULE]. An agency may apply these regulations to ongoing activities and environmental documents begun before [EFFECTIVE DATE OF FINAL RULE].

■ 8. Revise part 1507 to read as follows:

PART 1507—AGENCY COMPLIANCE

Sec.
1507.1 Compliance.
1507.2 Agency capability to comply.
1507.3 Agency NEPA procedures.
1507.4 Agency NEPA program information.

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1507.1 Compliance.

All agencies of the Federal Government shall comply with the regulations in parts 1500 through 1508.

§ 1507.2 Agency capability to comply.

Each agency shall be capable (in terms of personnel and other resources) of complying with the requirements of NEPA and the regulations in parts 1500 through 1508. Such compliance may include use of the resources of other agencies, applicants, and other participants in the NEPA process, but the using agency shall itself have sufficient capability to evaluate what others do for it and account for the contributions of others. Agencies shall:

(a) Fulfill the requirements of section 102(2)(A) of NEPA to utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on the human environment. Agencies shall designate a senior agency official to be responsible for overall review of agency NEPA compliance.

(b) Identify methods and procedures required by section 102(2)(B) of NEPA to ensure that presently unquantified environmental amenities and values may be given appropriate consideration.

(c) Prepare adequate environmental impact statements pursuant to section 102(2)(C) of NEPA and cooperate on the development of statements in the areas where the agency has jurisdiction by law or special expertise or is authorized to develop and enforce environmental standards.

(d) Study, develop, and describe alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. This requirement of section 102(2)(E) of NEPA extends to all such proposals, not just the more limited scope of section 102(2)(C)(iii) of NEPA where the discussion of alternatives is confined to impact statements.

(e) Comply with the requirements of section 102(2)(H) of NEPA that the agency initiate and utilize ecological information in the planning and development of resource-oriented projects.

(f) Fulfill the requirements of sections 102(2)(F), 102(2)(G), and 102(2)(I), of NEPA, Executive Order 11514, Protection and Enhancement of Environmental Quality, section 2, as amended by Executive Order 11991, Relating to Protection and Enhancement of Environmental Quality, and Executive Order 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting for Infrastructure Projects.

§ 1507.3 Agency NEPA procedures.

(a) No more than 12 months after [PUBLICATION DATE OF FINAL RULE] in the **Federal Register**, or 9 months after the establishment of an agency, whichever comes later, each agency shall develop or revise, as necessary, proposed procedures to implement the regulations in parts 1500 through 1508, including to eliminate any inconsistencies with these regulations. When the agency is a department, major subunits are encouraged (with the consent of the department) to adopt their own procedures. Except as otherwise provided by law or for agency efficiency, agency NEPA procedures shall not impose additional procedures or requirements beyond those set forth in these regulations.

(1) Each agency shall consult with the Council while developing or revising its proposed procedures and before publishing them in the **Federal Register** for comment. Agencies with similar programs should consult with each other and the Council to coordinate their procedures, especially for programs requesting similar information from applicants.

(2) Agencies shall provide an opportunity for public review and review by the Council for conformity with the Act and the regulations in parts 1500 through 1508 before adopting their final procedures. The Council shall complete its review within 30 days of the receipt of the proposed final procedures. Once in effect, the agency shall publish its NEPA procedures and ensure that they are readily available to the public.

(b) Agencies shall adopt, as necessary, agency NEPA procedures to improve agency efficiency and ensure that decisions are made in accordance with the Act's procedural requirements. Such procedures shall include, but not be limited to:

(1) Implementing procedures under section 102(2) of NEPA to achieve the requirements of sections 101 and 102(1).

(2) Designating the major decision points for the agency's principal programs likely to have a significant effect on the human environment and assuring that the NEPA process corresponds with them.

(3) Requiring that relevant environmental documents, comments, and responses be part of the record in formal rulemaking or adjudicatory proceedings.

(4) Requiring that relevant environmental documents, comments, and responses accompany the proposal through existing agency review processes so that decision makers use the statement in making decisions.

(5) Requiring that the alternatives considered by the decision maker are encompassed by the range of alternatives discussed in the relevant environmental documents and that the decision maker consider the alternatives described in the environmental impact statement. If another decision document accompanies the relevant environmental documents to the decision maker, agencies are encouraged to make available to the public before the decision is made any part of that document that relates to the comparison of alternatives.

(6) Requiring the combination of environmental documents with other agency documents, and may include designation of analyses or processes that shall serve the function of agency compliance with NEPA and the regulations in parts 1500 through 1508. To determine that an analysis individually or analyses in the aggregate serve as the functional equivalent of an EIS, an agency shall find that:

(i) There are substantive and procedural standards that ensure full and adequate consideration of environmental issues;

(ii) There is public participation before a final alternative is selected; and

(iii) A purpose of the analysis that the agency is conducting is to examine environmental issues.

(c) Agency procedures may include identification of actions that are not subject to NEPA, including:

(1) Non-major Federal actions;

(2) Actions that are non-discretionary actions, in whole or in part;

(3) Actions expressly exempt from NEPA under another statute;

(4) Actions for which compliance with NEPA would clearly and fundamentally conflict with the requirements of another statute; and

(5) Actions for which compliance with NEPA would be inconsistent with Congressional intent due to the requirements of another statute.

(d) Agency procedures shall comply with the regulations in parts 1500 through 1508 except where compliance would be inconsistent with statutory requirements and shall include:

(1) Those procedures required by §§ 1501.2(b)(4) (assistance to applicants), and 1506.6(e) (status information).

(2) Specific criteria for and identification of those typical classes of action:

(i) Which normally do require environmental impact statements.

(ii) Which normally do not require either an environmental impact statement or an environmental assessment and do not have a significant effect on the human environment (categorical exclusions (§ 1501.4)). Any procedures under this section shall provide for extraordinary circumstances in which a normally excluded action may have a significant environmental effect. Agency NEPA procedures shall identify where documentation of a categorical exclusion determination is required.

(iii) Which normally require environmental assessments but not necessarily environmental impact statements.

(3) Procedures for introducing a supplement to an environmental assessment or environmental impact statement into its formal administrative record, if such a record exists.

(e) Agency procedures may:

(1) Include specific criteria for providing limited exceptions to the provisions of the regulations in parts 1500 through 1508 for classified proposals. These are proposed actions that are specifically authorized under criteria established by an Executive Order or statute to be kept secret in the interest of national defense or foreign policy and are in fact properly classified pursuant to such Executive Order or statute. Agencies may safeguard and restrict from public dissemination environmental assessments and environmental impact statements that address classified proposals in accordance with agencies' own regulations applicable to classified information. Agencies should organize these documents so that classified portions are included as annexes, so that the agencies can make the unclassified portions available to the public.

(2) Provide for periods of time other than those presented in § 1506.11 when necessary to comply with other specific statutory requirements.

(3) Provide that where there is a lengthy period between the agency's decision to prepare an environmental impact statement and the time of actual preparation, the agency may publish the notice of intent required by § 1501.9 at a reasonable time in advance of preparation of the draft statement. Agency procedures shall provide for publication of supplemental notices to inform the public of a pause in its preparation of an environmental impact statement and for any agency decision to withdraw its notice of intent to prepare an environmental impact statement.

(4) Adopt procedures to combine its environmental assessment process with its scoping process.

(5) Provide for a process where the agency may consult with and apply a categorical exclusion listed in another agency's NEPA procedures to its proposed action by establishing a process that ensures application of the categorical exclusion is appropriate.

§ 1507.4 Agency NEPA program information.

(a) To allow agencies and the public to efficiently and effectively access information about NEPA reviews, agencies shall provide for agency websites or other means to make available environmental documents, relevant notices, and other relevant information for use by agencies, applicants, and interested persons. Such means of publication may include:

(1) Agency planning and environmental documents that guide agency management and provide for public involvement in agency planning processes;

(2) A directory of pending and final environmental documents;

(3) Agency policy documents, orders, terminology, and explanatory materials regarding agency decision-making processes;

(4) Agency planning program information, plans, and planning tools; and

(5) A database searchable by geographic information, document status, document type, and project type.

(b) Agencies shall provide for efficient and effective interagency coordination of their environmental program websites, including use of shared databases or application programming interface, in their implementation of NEPA and related authorities.

■ 9. Revise part 1508 to read as follows:

PART 1508—DEFINITIONS

Authority: 42 U.S.C. 4321–4347; 42 U.S.C. 4371–4375; 42 U.S.C. 7609; E.O. 11514, 35 FR 4247, Mar. 7, 1970, as amended by E.O. 11991, 42 FR 26967, May 25, 1977; and E.O. 13807, 82 FR 40463, Aug. 24, 2017.

§ 1508.1 Definitions.

The following definitions apply to the regulations in parts 1500 through 1508. Federal agencies shall use these terms uniformly throughout the Federal Government.

(a) *Act* or *NEPA* means the National Environmental Policy Act, as amended (42 U.S.C. 4321, *et seq.*).

(b) *Affecting* means will or may have an effect on.

(c) *Authorization* means any license, permit, approval, finding, determination, or other administrative decision issued by an agency that is required or authorized under Federal law in order to implement a proposed action.

(d) *Categorical exclusion* means a category of actions which the agency has determined in its agency NEPA procedures (§ 1507.3) normally do not have a significant effect on the human environment.

(e) *Cooperating agency* means any Federal agency (and a State, Tribal, or local agency with agreement of the lead agency) other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment.

(f) *Council* means the Council on Environmental Quality established by title II of the Act.

(g) *Effects* or *impacts* means effects of the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to

the proposed action or alternatives. Effects include reasonably foreseeable effects that occur at the same time and place and may include reasonably foreseeable effects that are later in time or farther removed in distance.

(1) Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

(2) A ''but for'' causal relationship is insufficient to make an agency responsible for a particular effect under NEPA. Effects should not be considered significant if they are remote in time, geographically remote, or the product of a lengthy causal chain. Effects do not include effects that the agency has no ability to prevent due to its limited statutory authority or would occur regardless of the proposed action. Analysis of cumulative effects is not required.

(h) *Environmental assessment* means a concise public document prepared by a Federal agency to aid an agency's compliance with the Act and support its determination of whether to prepare an environmental impact statement or finding of no significant impact, as provided in § 1501.6.

(i) *Environmental document* means an environmental assessment, environmental impact statement, finding of no significant impact, or notice of intent.

(j) *Environmental impact statement* means a detailed written statement as required by section 102(2)(C) of NEPA.

(k) *Federal agency* means all agencies of the Federal Government. It does not mean the Congress, the Judiciary, or the President, including the performance of staff functions for the President in his Executive Office. It also includes, for purposes of the regulations in parts 1500 through 1508, States, units of general local government, and Tribal governments assuming NEPA responsibilities from a Federal agency pursuant to statute.

(l) *Finding of no significant impact* means a document by a Federal agency briefly presenting the reasons why an action, not otherwise categorically excluded (§ 1501.4), will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared.

(m) *Human environment* means comprehensively the natural and physical environment and the relationship of present and future generations of Americans with that environment. (See the definition of ''effects.'')

(n) *Jurisdiction by law* means agency authority to approve, veto, or finance all or part of the proposal.

(o) *Lead agency* means the agency or agencies, in the case of joint lead agencies, preparing or having taken primary responsibility for preparing the environmental impact statement.

(p) *Legislation* means a bill or legislative proposal to Congress developed by or with the significant cooperation and support of a Federal agency, but does not include requests for appropriations or legislation recommended by the President.

(q) *Major Federal action* or *action* means an action subject to Federal control and responsibility with effects that may be significant. Major Federal action does not include non-discretionary decisions made in accordance with the agency's statutory authority or activities that do not result in final agency action under the Administrative Procedure Act. Major Federal action also does not include non-Federal projects with minimal Federal funding or minimal Federal involvement where the agency cannot control the outcome of the project.

(1) Major Federal actions may include new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by Federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals (§ 1506.8). Actions do not include funding assistance solely in the form of general revenue sharing funds with no Federal agency control over the subsequent use of such funds. Actions do not include loans, loan guarantees, or other forms of financial assistance where the Federal agency does not exercise sufficient control and responsibility over the effects of the action. Actions do not include farm ownership and operating loan guarantees by the Farm Service Agency pursuant to 7 U.S.C. 1925 and 1941 through 1949 and business loan guarantees by the Small Business Administration pursuant to 15 U.S.C. 636(a), 636(m), and 695 through 697f. Actions do not include bringing judicial or administrative civil or criminal enforcement actions.

(2) Major Federal actions tend to fall within one of the following categories:

(i) Adoption of official policy, such as rules, regulations, and interpretations adopted pursuant to the Administrative Procedure Act, 5 U.S.C. 551 *et seq.;* implementation of treaties and international conventions or agreements; formal documents establishing an agency's policies which will result in or substantially alter agency programs.

(ii) Adoption of formal plans, such as official documents prepared or approved by Federal agencies which prescribe alternative uses of Federal resources, upon which future agency actions will be based.

(iii) Adoption of programs, such as a group of concerted actions to implement a specific policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive.

(iv) Approval of specific projects, such as construction or management activities located in a defined geographic area. Projects include actions approved by permit or other regulatory decision as well as Federal and federally assisted activities.

(r) *Matter* includes for purposes of part 1504:

(1) With respect to the Environmental Protection Agency, any proposed legislation, project, action or regulation as those terms are used in section 309(a) of the Clean Air Act (42 U.S.C. 7609).

(2) With respect to all other agencies, any proposed major Federal action to which section 102(2)(C) of NEPA applies.

(s) *Mitigation* means measures that avoid, minimize, or compensate for reasonably foreseeable impacts to the human environment caused by a proposed action as described in an environmental document or record of decision and that have a nexus to the effects of a proposed action. While NEPA requires consideration of mitigation, it does not mandate the form or adoption of any mitigation. Mitigation includes:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action.

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(5) Compensating for the impact by replacing or providing substitute resources or environments.

(t) *NEPA process* means all measures necessary for compliance with the

requirements of section 2 and title I of NEPA.

(u) *Notice of intent* means a public notice that an agency will prepare and consider an environmental impact statement.

(v) *Page* means 500 words and does not include explanatory maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information.

(w) *Participating agency* means a Federal, State, Tribal, or local agency participating in an environmental review or authorization of an action.

(x) *Proposal* means a proposed action at a stage when an agency has a goal, is actively preparing to make a decision on one or more alternative means of accomplishing that goal, and can meaningfully evaluate its effects. A proposal may exist in fact as well as by agency declaration that one exists.

(y) *Publish* and *publication* mean methods found by the agency to efficiently and effectively make environmental documents and information available for review by interested persons, including electronic publication, and adopted by agency NEPA procedures pursuant to § 1507.3.

(z) *Reasonable alternatives* means a reasonable range of alternatives that are technically and economically feasible, meet the purpose and need for the proposed action, and, where applicable, meet the goals of the applicant.

(aa) *Reasonably foreseeable* means sufficiently likely to occur such that a person of ordinary prudence would take it into account in reaching a decision.

(bb) *Referring agency* means the Federal agency that has referred any matter to the Council after a determination that the matter is unsatisfactory from the standpoint of public health or welfare or environmental quality.

(cc) *Scope* consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The scope of an individual statement may depend on its relationships to other statements (§ 1501.11).

(dd) *Senior agency official* means an official of assistant secretary rank or higher, or equivalent, that is designated for agency NEPA compliance, including resolving implementation issues and representing the agency analysis of the effects of agency actions on the human environment in agency decision-making processes.

(ee) *Special expertise* means statutory responsibility, agency mission, or related program experience.

(ff) *Tiering* refers to the coverage of general matters in broader environmental impact statements or environmental assessments (such as national program or policy statements) with subsequent narrower statements or environmental analyses (such as regional or basin-wide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.

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